Jan 77242

Access DB#

RECEIVED

OCT - 4 2002

(STIC)

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Leigh Maier Examiner # : 77012 Date: 10-4-02

Art Unit: 1623 Phone Number 308-4525 Serial Number: 10/082,555

Mail Box and Bldg/Room Location: 7A03 8B19 (mailbox) Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Bib sheet attached

Inventors (please provide full names):

Earliest Priority Filing Date:

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

Please search for compositions comprising deacetylated xanthan gum using oil "drilling fluids" or "drilling muds" as a search term, but not limited to that.

Thanks,

Leigh

Jan Delaval
Reference Librarian
Biotechnology & Chemical Library
CM1 1E07 – 703-308-4498
jan.delaval@uspto.gov

Please return claims with search.

****

STAFF USE ONLY

Searcher:	Jan	**Type of Search**		**Vendors and cost where applicable**	
Searcher Phone #:	4498	NA Sequence (#)		STN	✓
Searcher Location:		AA Sequence (#)		Dialog	
Date Searcher Picked Up:	10/10/02	Structure (#)		Questel/Orbit	
Date Completed:	10/10/02	Bibliographic	✓	Dr.Link	
Searcher Prep & Review Time:	25	Litigation		Lexis/Nexis	
Clerical Prep Time:		Fulltext		Sequence Systems	
Online Time:	90	Patent Family		WWW/Internet	
		Other		Other (specify)	

PTO-1590 (8-01)

```
=> fil reg
FILE 'REGISTRY' ENTERED AT 08:21:12 ON 10 OCT 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2002 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:    9 OCT 2002  HIGHEST RN 460312-12-3
DICTIONARY FILE UPDATES:   9 OCT 2002  HIGHEST RN 460312-12-3

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

Crossover limits have been increased.  See HELP CROSSOVER for details.

Experimental and calculated property data are now available.  See HELP
PROPERTIES for more information.  See STNote 27, Searching Properties
in the CAS Registry File, for complete details:
http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf

=> d ide can l1

L1   ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN   11138-66-2  REGISTRY
CN   Xanthan gum (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN   Actigum CX 9
CN   ADM 40
CN   B 1459
CN   Biopolymer 9702
CN   Biopolymer XB 23
CN   Biozan R
CN   Bisfect XA 200
CN   Bistop
CN   Chemicogel
CN   Echogum
CN   Echogum F
CN   Echogum RD
CN   Echogum SF
CN   Echogum T
CN   Ekogum
CN   Ekogum ketorol
CN   Enorflo X
CN   Flocon 1035
CN   Flocon 4800
CN   Flocon 4800C
CN   Flodrill S
CN   Galaxy XB
CN   Gums, xanthomonas
CN   Idvis
CN   Jungbunzlauer ST
CN   K 5C151
CN   K 9C57
CN   Kelco BT
CN   Kelflo
CN   Keltrol
CN   Keltrol CG
CN   Keltrol F
CN   Keltrol RD
```

Jan Delaval
Reference Librarian
Biotechnology & Chemical Library
CM1 1E07 – 703-308-4498
jan.delaval@uspto.gov

```
CN   Keltrol SF
CN   Keltrol T
CN   Keltrol TF
CN   Keltrol TF 1000
CN   Kelzan
CN   Kelzan 140X
CN   Kelzan AR
CN   Kelzan ASX
CN   Kelzan D
CN   Kelzan F
CN   Kelzan M
CN   Kelzan MF
CN   Kelzan S
CN   Kelzan SS 4000
CN   Kelzan T
CN   Kelzan XC
CN   Kelzan XCD
ADDITIONAL NAMES NOT AVAILABLE IN THIS FORMAT - Use FCN, FIDE, or ALL for
     DISPLAY
DR   12673-42-6, 12771-06-1, 9088-32-8, 54511-23-8, 56592-13-3, 98112-77-7,
     51811-95-1, 37189-49-4, 37279-85-9, 37332-19-7, 37383-52-1, 80450-59-5,
     85568-76-9, 82600-55-3, 39393-27-6, 39444-54-7
MF   Unspecified
CI   PMS, COM, MAN
PCT  Manual registration, Polyester, Polyester formed
LC   STN Files:   AGRICOLA, ANABSTR, AQUIRE, BIOBUSINESS, BIOSIS, BIOTECHNO,
       CA, CANCERLIT, CAPLUS, CASREACT, CBNB, CEN, CHEMCATS, CHEMLIST, CIN,
       CSCHEM, DDFU, DRUGU, EMBASE, ENCOMPLIT, ENCOMPLIT2, ENCOMPPAT,
       ENCOMPPAT2, IFICDB, IFIPAT, IFIUDB, IPA, MEDLINE, MRCK*, MSDS-OHS,
       NAPRALERT, NIOSHTIC, PIRA, PROMT, TOXCENTER, TULSA, USPAT2, USPATFULL,
       VTB
         (*File contains numerically searchable property data)
     Other Sources:   DSL**, EINECS**, TSCA**
         (**Enter CHEMLIST File for up-to-date regulatory information)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
             6852 REFERENCES IN FILE CA (1962 TO DATE)
              236 REFERENCES TO NON-SPECIFIC DERIVATIVES IN FILE CA
             6886 REFERENCES IN FILE CAPLUS (1962 TO DATE)

REFERENCE   1:  137:222159

REFERENCE   2:  137:222095

REFERENCE   3:  137:222032

REFERENCE   4:  137:221941

REFERENCE   5:  137:221810

REFERENCE   6:  137:221757

REFERENCE   7:  137:218774

REFERENCE   8:  137:216182

REFERENCE   9:  137:212293

REFERENCE  10:  137:208425


=> d his
```

```
     (FILE 'HOME' ENTERED AT 07:45:35 ON 10 OCT 2002)
                SET COST OFF

     FILE 'REGISTRY' ENTERED AT 07:46:08 ON 10 OCT 2002
                E XANTHAN GUM/CN
L1            1 S E3

     FILE 'HCAPLUS' ENTERED AT 07:46:23 ON 10 OCT 2002
L2         6898 S L1
L3           20 S L1 (L) DEACET?
L4           20 S L3 AND L2
L5         6651 S XANTHAN(A)GUM
                E DEACETYLATION/CT
                E E3+ALL
L6         1069 S E5
                E E4+ALL
L7          597 S E4
                E E9+ALL
L8          987 S E4,E3+NT
                E E10+ALL
                E E8+ALL
L9         1466 S E2,E4
L10          14 S L2,L5 AND L6-L9
L11          43 S L2,L5  AND DEACET?
L12          13 S L2,L5  AND DEACYL?
L13          57 S L4,L10-L12 AND L2-L12
                E LANGLOIS B/AU
L14          67 S E3-E5,E11-E13
L15           1 S L14 AND L13
L16           1 S L14 AND L2,L5
                E RHODIA/PA,CS
L17        1137 S E3,E4
L18          32 S L2,L5 AND L17
L19           1 S L13 AND L15,L16,L18
L20          31 S L18 NOT L19
                E DRILLING FLUID/CT
                E E4+ALL
L21        7554 S E2,E3,E1+NT
                E E8+ALL
L22        1151 S E2,E1+NT
                E E7+ALL
L23        1561 S E3+NT
                E DRILLING FLUID/CT
                E E4+ALL
                E E9+ALL
L24        2374 S E4,E3+NT
                E E13+ALL
L25        5086 S E4,E3+NT
                E E12+ALL
L26        2374 S E4,E3+NT
                E E2+ALL
L27       12718 S E3,E2+NT
                E DRILLING FLUIDS/CT
L28         402 S E8
                E E3+ALL
                E E11+ALL
L29         388 S E1
L30         276 S L2,L5 AND L21-L29
L31           3 S L30 AND L20
L32           1 S L30 AND L13
L33           4 S L31,L32
L34           1 S L33 AND LANGLOIS ?/AU
L35          56 S L13 NOT L34
```

```
L36            0 S L35 AND L30
L37            1 S L35 AND FUEL?/SC,SX
L38            2 S L34,L37
L39           55 S L35 NOT L38
L40           55 S L39 AND XANTHAN
L41           47 S L40 AND GUM
L42            8 S L40 NOT L41
L43           55 S L39-L42
L44           49 S L43 AND (PD<=20000114 OR PRD<=20000114 OR AD<=20000114)
                 SEL DN AN 3 4 14 25 30 31 35 44 45 46 47
L45           11 S L44 AND E1-E33
L46           13 S L38,L45
L47           44 S L43 NOT L46
                 SEL DN AN 5 6 11 16 17 18 19 20 25 26 28 31 32 33 34 35 38 39 4
L48           21 S L47 AND E34-E96
L49           34 S L46,L48
L50            9 S L2,L5 AND (DE ACET? OR DE ACYL? OR NONACET? OR NONACYL? OR NO
L51            4 S L50 AND L49
L52            5 S L50 NOT L51
L53            4 S L52 NOT SUBSTRATE/TI
L54           38 S L49,L51,L53
L55         8536 S L2,L5 OR XANTHAN
L56            3 S L55 AND ?PENTAMER?
L57           40 S L54,L56
L58           40 S L57 AND L2-L57
L59            9 S L58 AND ?ACYL?
L60           36 S L58 AND ?ACETYL?
L61           40 S L58-L60
L62          161 S L55 AND C09K007/IC,ICM,ICS
L63            1 S L62 AND L61
L64           40 S L61,L63

     FILE 'REGISTRY' ENTERED AT 08:21:12 ON 10 OCT 2002

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 08:21:22 ON 10 OCT 2002
```


FILE COVERS 1907 - 10 Oct 2002 VOL 137 ISS 15
FILE LAST UPDATED: 9 Oct 2002 (20021009/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

CAS roles have been modified effective December 16, 2001. Please check your SDI profiles to see if they need to be revised. For information on CAS roles, enter HELP ROLES at an arrow prompt or use the CAS Roles thesaurus (/RL field) in this file.

=> d l64 bib abs hitrn retable tot

L64 ANSWER 1 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:605427 HCAPLUS
TI Novel application of synergistic guar/**non-acetylated xanthan gum** mixtures in hydraulic fracturing
AU Fischer, C. C.; Navarrete, R. C.; Constien, V. G.; Coffey, M. D.; Asadi, M.
CS Constien & Associates, USA
SO SPE International Symposium on Oilfield Chemistry, Conference Proceedings, Houston, TX, United States, Feb. 13-16, 2001 (2001), 485-496 Publisher: Society of Petroleum Engineers, Richardson, Tex.
CODEN: 69CZJT
DT Conference; (computer optical disk)
LA English
AB Fracturing fluids have traditionally been viscosified with guar and guar derivs. **Non-acetylated xanthan** is a variant of **xanthan gum** which when combined with guar in soln. develops a synergistic interaction that generates superior viscosity and particle transport at low polymer concns. These water-base linear fluids have improved low shear viscosity at concns. at or below 25 lb/1,000gal when compared to fluids viscosified using a single viscosifier such as guar or **xanthan gum**. The polymer mixts. can be crosslinked to provide enhanced viscosity at higher temps.

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1998			Recommended Practice	
Dea, I	1993		21	Industrial Gums	
Gulbis, J	2000		7	Reservoir Stimulatio	
Harris, P				Paper SPE 38621, pre	
Mwamufiya, I	1998			PhD Thesis, Princeto	
Nimerick, K				Paper SPE 35638, pre	
Pope, D				Paper SPE 31094, pre	
Roodhart, L				Paper SPE 13905, pre	
Samuel, M				Paper SPE 38622, pre	
Shah, S				Paper SPE 49040, pre	
Talashek, T	2000			Personal Communicati	
Tehrani, A	1996	40	1057	J Rheol	
Unwin, A				Paper SPE 29649, pre	
Willberg, D				Paper SPE 38620, pre	

L64 ANSWER 2 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **2001:163308** HCAPLUS
DN **134:349490**
TI Effect of a range of microbial polysaccharides on the diffusion of manganese ions using spatially resolved NMR relaxometry
AU Hart, T. D.; Hill, R. J.; Glover, P. M.; Lynch, J. M.; Chamberlain, A. H. L.
CS School of Biological Sciences, University of Surrey, Guildford, GU2 5XH, UK
SO Enzyme and Microbial Technology (2001), 28(4-5), 370-375
CODEN: EMTED2; ISSN: 0141-0229
PB Elsevier Science Ireland Ltd.
DT Journal
LA English
AB In accordance with the theory of contact exchange, it is hypothesized that the presence of neg. charge in microbial exopolysaccharides increases the rate of cation transport. These typically acidic materials may provide a fast-track for the diffusion of nutrient cations through the polymer layer for uptake at the organism cell surface. We have measured the diffusion coeff. of a model cation, Mn2+, through **xanthan, de-acetylated xanthan**, scleroglucan and chitosan using

spatially resolved NMR relaxometry. The concn. of Mn^{2+} in soln. was measured by recording the change in the spin-spin (T2) relaxation time of water 1H over time in compartments either side of a polymer layer. This approach provides a sensitive, in situ, non-invasive method of measuring the rate of diffusion of paramagnetic cations through hydrophilic polysaccharides. The neg.-charged polysaccharides, **xanthan** and **de-acetylated xanthan**, permitted a significantly faster rate (2-2.5.times.) of cation transport compared to the uncharged polymer, scleroglucan. The pos.-charged polysaccharide chitosan reduced the rate of Mn^{2+} diffusion to around half the value obtained for scleroglucan. These results suggest that the presence and nature of fixed charges on the polysaccharide mol. affects the rate of cation transport in accordance with the theory of contact exchange. The presence of neg. charge on microbial exopolysaccharides may thus improve the availability of nutrient cations at the organism cell surface.

IT **11138-66-2, Xanthan 11138-66-2D, Xanthan, deacetylated**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(effect of a range of microbial polysaccharides on the diffusion of manganese ions using spatially resolved NMR relaxometry)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bloembergen, N	1961	34	842	J Chem Phys	HCAPLUS
Corpe, W	1980		105	Adsorption of microo	HCAPLUS
Efron, B	1977	7	1	Ann Stat	
Foster, R	1983			Ultrastructure of th	
Geddie, J	1993	74	467	J Appl Bacteriol	HCAPLUS
Geesey, G	1989		325	Metal ions and bacte	
Glauser, R	1960	5	1	Agrochimica	HCAPLUS
Harned, H	1958			The physical chemist	
Hart, T	2000			Environ Microbiol, i	
Hart, T	1999	24	339	Enzyme Microb Techno	HCAPLUS
Hassler, R	1990	6	182	Biotechnol Prog	HCAPLUS
Holzwarth, G	1985	26	271	Dev Ind Microbiol	HCAPLUS
Jeanes, A	1961	5	519	J Appl Polymer Sci	HCAPLUS
Jenny, H	1961	5	281	Agrochimica	
Jenny, H	1961		665	Growth in living sys	
Jenny, H	1966	25	265	Pl Soil	HCAPLUS
La Paglia, C	1997	63	3158	Appl Environ Microbi	HCAPLUS
Luz, Z	1965	43	3750	J Chem Phys	HCAPLUS
Meares, P	1958	55	273	J Chim Phys	HCAPLUS
Nambier, G	1976	44	267	Pl Soil	
Patil, S	1993	173	153	J Radional Nuclear C	HCAPLUS
Ramamoorthy, S	1977	66	527	J Theor Biol	HCAPLUS
Sollner, K	1974	53	267	J Dental Res	HCAPLUS
Tako, M	1992	489	268	ACS Symposium Series	HCAPLUS

L64 ANSWER 3 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **2001:94303** HCAPLUS
DN **134:310527**
TI Enhanced compatibility of **xanthan** variants in phosphate systems
AU Swazey, John
CS CP Kelco, UK
SO Research Disclosure (2001), 441(Jan.), P5-P8 (No. 441005)
CODEN: RSDSBB; ISSN: 0374-4353
PB Kenneth Mason Publications Ltd.
DT Journal; Patent
LA English

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	RD 441005		20010110		

PRAI RD 2001-441005 20010110
AB **Nonacetylated xanthan** (NAX), nonpyruvylated **xanthan** (NPX), and **nonacetylated,** nonpyruvylated **xanthan** (NPNAX) were tested in ammonium polyphosphate soln. (10-34-0) and diammonium phosphate. Hydration is typically not possible in fluids contg. >45% 10-34-0 soln. with **xanthan** products; however, with NAX hydration was possible in solns. contg. .gtoreq.60% 10-34-0. For NPNAX hydration was possible in solns. contg. .gtoreq.70% 10-34-0. **Xanthan gum** variants also performed well in diammonium phosphate. Compatibility of prehydrated **xanthan gum** variants with phosphates was tested also. Results indicated improved compatibility of **xanthan** variants in systems with high phosphate levels. Findings extend **xanthan** functionality to formulations where std. **xanthan gum** is incompatible or unstable.
IT **11138-66-2D, Xanthan gum, deacetylated** and (or) depyruvylated
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(enhanced compatibility of **xanthan** variants in phosphate systems)

L64 ANSWER 4 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **2000:768961** HCAPLUS
DN **133:295710**
TI Viscosity-stable low-**acetylated xanthan gum** for food use
IN Zablocki, Linda J.; Bousman, W. Scott; Solanki, Yogesh; Milovanovic, Susan B.; King, Alan
PA Monsanto Company, USA
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	US 6139895	A	20001031	US 1999-347259	19990706	<--
	WO 2001001793	A1	20010111	WO 2000-US17764	20000629	<--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM					
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG					
	EP 1207761	A1	20020529	EP 2000-941759	20000629	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL					
PRAI	US 1999-347259	A	19990706	<--		
	WO 2000-US17764	W	20000629			

AB An acidic edible liq. compn. comprises a low-**acetylated xanthan gum** in an amt. effective to sustain the initial viscosity of the compn. for at least about four months. Preferred compns. include beverages and syrups. Beverages include carbonated and non-carbonated soft drinks, still beverages, fruit-juice-type beverages, squashes and cordials, alc. and nonalcoholic, their concs. and mixts. thereof. A method for stabilizing an acidic edible liq. compn. comprises admixing an effective amt. of a low-**acetylated xanthan gum** to maintain the initial viscosity of the compn. for at least about four months under typical storage conditions. Thus,

deacetylated xanthan gum (1.0% wt./wt.;
acetate content 1%) and sodium benzoate (0.33% wt./wt.) were mixed with deionized water; 150 g of the compn. was dild. to 500 g by the addn. of deionized water. The compn. was titrated to pH 4.0 with phosphoric acid. The initial viscosity was 195 cP. After 39 wk storage at ambient temp., e.g., 22.degree., the pH was 3.9 and the viscosity was 177.5 cp; the loss in viscosity during storage was 17.5 cP or about 9%.

IT **11138-66-2, Xanthan gum**
RL: FFD (Food or feed use); PRP (Properties); BIOL (Biological study); USES (Uses)
(**deacetylated**; viscosity-stable low-**acetylated** **xanthan gum** for food use)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1997			WO 9746656	HCAPLUS
Campaigne	1979			US 4154654	HCAPLUS
Cheetham, N	1985	5	399	Carbohydr Polym	HCAPLUS
Doherty	1996			US 5514791	HCAPLUS
Hassler, R	1990	6	182	Biotechnol Prog	HCAPLUS
Jansson, P	1975	45	275	Carbohydr Research	HCAPLUS
Kragen	1983			US 4369125	HCAPLUS
Maury	1982			US 4352882	HCAPLUS
McNeely	1968			US 3391060	HCAPLUS
Montezinos	1998			US 5792502	HCAPLUS
Patton	1962			US 3020206	HCAPLUS
Patton	1962			US 3020207	HCAPLUS
Richmon	1983			US 4375512	HCAPLUS
Stankowski, J	1993	241	321	Carbohydr Research	HCAPLUS
Tait, M	1990	13	133	Carbohydr Polym	HCAPLUS

L64 ANSWER 5 OF 40 HCAPLUS

AN **2000:438241** HCAPLUS

DN **133:336764**

TI Heterotypic interactions of **deacetylated xanthan** with a galactomannan of high galactose substitution during synergistic gelation

AU Goycoolea, Francisco M.; Milas, Michel; Rinaudo, Marguerite

CS Centro de Investigacion en Alimentacion y Desarrollo, Sonora, 83000, Mex.

SO Special Publication - Royal Society of Chemistry (**2000**), 251(Gums and Stabilisers for the Food Industry 10), 229-240
CODEN: SROCDO; ISSN: 0260-6291

PB Royal Society of Chemistry

DT Journal

LA English

AB Phys. thermo-reversible gels of **deacetylated xanthan** (DX) mixed with varying concns. of galactomannan extd. from mesquite (Prosopis spp.) seed endosperm (MSG) (M/G .apprx. 1.1; MW .apprx. 2.1 .times. 106) set and melt co-operatively at .apprx.23-27.degree.C in 5 mM NaCl. The liq.-like character of the gels at 20.degree.C (tan .delta.20.degree.C) and at the gelling temp. (tan .delta.critical), attained their min. values when the concn. of MSG was .apprx.0.4-0.5 g L-1, while holding fixed that of DX at .apprx.1.0 g L-1. Mech. elasticity (G'), increased progressively as the proportion of MSG incorporated in the mixt. increased from 0 up to .apprx.0.5 g L-1 and beyond this concn., G' values showed little further change with increasing MSG concn.; this initial behavior is related to a progressive crosslinking of galactomannan and DX leading to establishment of a temporary gel network. Both values of onset temp. of gel formation (Tg) and that of DSC midpoint thermal transition (Tm), are in good agreement (Tg .apprx.23.3.degree.C and Tm .apprx.26.0.degree.C) and vary slightly in mixts. within this range of compn. However, as the amt. of unbound MSG increased for a MSG/DX wt. ratio .gtoreq. 0.6, Tg values increased progressively up to

.apprx.27.0.degree.C, while Tm also showed a break-point in the pattern of behavior for setting and melting as a function of compn. For mixts. of MSG:DX wt. ratio < .apprx.0.5, the interaction in the system has the characteristics of an heterotypic assocn. process, resulting in the creation of a coupled gel network. The optimum stoichiometric ratio seems to involve a 1:1 polymer chain pair (based on the contour length) of high galactose galactomannan and disordered DX species. Greater Tg and Tm values, beyond the stoichiometric compn. ratio may result from the increase in solvent viscosity due to unbound surplus galactomannan.

IT **11138-66-2, Xanthan**
RL: PEP (Physical, engineering or chemical process); PROC (Process) (**deacetylated**; heterotypic interactions of **deacetylated xanthan** with a galactomannan of high galactose substitution during synergistic gelation)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Annable, P	1994	27	4202	Macromolecules	
Bjorndal, H	1970	9	610	Angew Chem Int Ed En	HCAPLUS
Bresolin, T	1998	23	263	Int J Biol Macromol	HCAPLUS
Bresolin, T	1999			Int J Biol Macromol	
Brownsey, G	1988	176	329	Carbohydr Res	
Cairns, P	1987	160	411	Carbohydr Res	HCAPLUS
Cairns, P	1986	322	89	Nature	HCAPLUS
Chambon, F	1987	31	683	J Rheol	HCAPLUS
Chandrasekaran, R	1997	32	201	Carbohydr Polym	HCAPLUS
Cheetham, N	1986	6	257	Carbohydr Polym	HCAPLUS
Dea, I	1972	31	241	Adv Carbohydrate Che	
Dea, I	1977	57	249	Carbohydr Res	HCAPLUS
Dea, I	1986	147	275	Carbohydr Res	HCAPLUS
Fernandes, P	1995	24	269	Biopolymers	
Foster, T	1992			Thesis University of	
Ganter, J	1995	17	13	Int J Biol Macromol	HCAPLUS
Gomes, C	1998		239	Gums and Stabilisers	HCAPLUS
Goycoolea, F	1995	28	351	Carbohydr Polym	HCAPLUS
Goycoolea, F	1995	28	8308	Macromolecules	HCAPLUS
Jansson, P	1975	45	275	Carbohydr Res	HCAPLUS
Lurdin, L	1995	26	129	Carbohydr Polym	
Mannion, R	1992	19	91	Carbohydr Polym	HCAPLUS
McCleary, B	1979	71	205	Carbohydr Res	HCAPLUS
McCleary, B	1981	92	269	Carbohydr Res	HCAPLUS
Melton, L	1976	46	245	Carbohydr Res	HCAPLUS
Milas, M	1986	158	191	Carbohydr Res	HCAPLUS
Morris, E	1995		247	Biopolymer Mixtures	HCAPLUS
Morris, E	1977	110	1	J Mol Biol	HCAPLUS
Nijenhuis, K	1989	22	411	Macromolecules	
Rinaudo, M	1981	150	367	ACS Symposium Series	HCAPLUS
Rinaudo, M	1998	39	680	Polymer Preprints	HCAPLUS
Schorsch, C	1997	34	165	Int J Biol Macromol	HCAPLUS
Shatwell, K	1990	206	87	Carbohydr Res	HCAPLUS
Tako, M	1985	138	207	Carbohydr Res	HCAPLUS
Tinland, B	1988	9	69	Makromol Chem Rapid	HCAPLUS
Williams, P	1991	4	489	Food Hydrocoll	HCAPLUS
Zhan, D	1993	21	53	Carbohydr Polym	HCAPLUS

L64 ANSWER 6 OF 40 HCAPLUS
AN **1999:169667** HCAPLUS
DN **130:322537**
TI A stray field magnetic resonance study of water diffusion in bacterial exopolysaccharides
AU Hart, T. D.; Chamberlain, A. H. L.; Lynch, J. M.; Newling, B.; McDonald, P. J.

CS School of Biological Sciences, University of Surrey, Guildford, GU2 5XH, UK

SO Enzyme and Microbial Technology (**1999**), 24(5/6), 339-347
CODEN: EMTED2; ISSN: 0141-0229
PB Elsevier Science Inc.
DT Journal
LA English

AB Nuclear (1H) magnetic stray field gradient methods have been used to measure the concn. dependence of the water self-diffusion coeff. (Dself) in the com. available bacterial exopolysaccharide **xanthan** and a chem. derived **deacetylated** form. The Dself coeff. of water is interpreted to directly relate to the degree of water binding in the polysaccharide gel. The removal of **acetyl** groups from **xanthan** has been shown to result in a redn. in Dself at any given polymer concn. In addn., stray field magnetic resonance profiling (1H) has been used to measure the rate at which water diffuses through a polysaccharide gel at a range of polymer concns. (Dmutual coeff. of water) in: **xanthan; deacetylated xanthan** and polymers produced by the soil bacteria, Enterobacter cloacae and Azotobacter chroococcum. Samples with a reduced **acetyl** or uronic acid content showed a lower Dmutual coeff. at a range of polymer concns. The lower Dself coeff. found for **deacetylated xanthan** is believed to contribute to the lower Dmutual coeff. obtained relative to the native mol. The obsd. link between the mobility (Dself) and transport (Dmutual) of water in bacterial exopolysaccharides furthers our understanding of the role(s) of these materials for bacteria and opens new opportunities for engineering bacteria for improved survival in water-stressed environments.

IT **11138-66-2, Xanthan gum 11138-66-2D, Xanthan gum, deacetylated**
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)
(a stray field magnetic resonance study of water diffusion in bacterial exopolysaccharides)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Al-Rashidi, R	1982	14	489	Soil Biol Biochem	
Ashraf, M	1994	13	17	Crit Rev Plant Sci	
Barrie, J	1968		259	Diffusion in Polymer	HCAPLUS
Bengtsson, G	1991	86	15	FEMS Microb Ecol	HCAPLUS
Bitton, G	1976	45	65	Plant Soil	
Blumenkrantz, N	1973	54	484	Anal Biochem	HCAPLUS
Bohnert, H	1996	14	89	Tibtech	HCAPLUS
Brewer, R	1984	251	42	Sci Am	
Brown, M	1979	13	817	Water Res	HCAPLUS
Bushby, H	1977	99	19	J Gen Microbiol	
Callet, F	1987	9	291	Int J Biol Macromol	HCAPLUS
Chapman, S	1985	7	161	Enzyme Microb Techno	HCAPLUS
Chenu, C	1995		217	Environmental Impact	HCAPLUS
Chenu, C	1993	56	143	Geoderma	HCAPLUS
Cheshire, M	1977	28	1	J Soil Sci	HCAPLUS
Crank, J	1975		105	The Mathematics of D	
Djordjevic, M	1987	25	145	Ann Rev Phytopathol	
Dubois, M	1956	3	350	Anal Chem	
Dubos, R	1945			The Bacterial Cell	
Dudman, W	1977		357	Surface Carbohydrate	HCAPLUS
Foster, R	1983		145	Ultrastructure of th	
Geddie, J	1993	74	467	J Appl Bacteriol	HCAPLUS
Geesey, G	1989		325	Metal Ions and Bacte	
Harper, S	1979	112	45	J Gen Microbiol	
Harris, R	1981		23	Water Potential Rela	HCAPLUS

Hart, T	1997			Diffusion of ions an	
Hestrin, S	1949	180	249	J Biol Chem	HCAPLUS
Kamoun, S	1989	171	1755	J Bacteriol	HCAPLUS
Kennedy, A	1987	9	12	Biotechnol Appl Bioc	HCAPLUS
Kieft, T	1987	19	119	Soil Biol Biochem	
Kimmich, R	1991	91	136	J Magn Reson	HCAPLUS
Krynicki, K	1978	66	199	Faraday Discuss Chem	
La Paglia, C	1997	63	3158	Appl Environ Microbi	HCAPLUS
Lynch, J	1981	126	371	J Gen Microbiol	
Marechal, P	1994	42	617	Appl Microbiol Biote	HCAPLUS
McDonald, P	1997	30	69	Prog Nucl Magn Reson	HCAPLUS
Meares, P	1968		373	Diffusion in Polymer	HCAPLUS
Norkrans, B	1980		51	Advances in Microbia	HCAPLUS
Osa-Afiana, L	1982	46	285	J Soil Sci Soc Am	
Poirier, I	1997	82	101	J Appl Microbiol	MEDLINE
Rees, D	1977		1	Polysaccharide Shape	
Roberson, E	1992	58	1284	Appl Environ Microbi	HCAPLUS
Samoilenko, A	1988	47	417	JETP Lett	
Schmit, J	1984	229	733	Comptes Rendus Acad	
Seybold, C	1994	25	2171	Commun Soil Sci Plan	HCAPLUS
Slonekar, J	1962	194	478	Nature	
Stejskal, E	1965	42	288	J Chem Phys	HCAPLUS
Sutherland, I	1985	39	243	Ann Rev Microbiol	HCAPLUS
Sutherland, I	1994	12	393	Biotechnol Adv	HCAPLUS
Tait, M	1986	132	1483	J Gen Microbiol	HCAPLUS
Tomlinson, D	1972	25	735	Mol Phys	
Wilkinson, J	1958	22	46	Bacteriol Rev	HCAPLUS
Woofaardt, G	1994	27	279	Microb Ecol	

L64 ANSWER 7 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:77644 HCAPLUS
DN 130:141516
TI **Deacetylated xanthan gum**-containing guar-free aqueous drilling fluids for petroleum wells
IN **Langlois, Bruno**
PA **Rhodia** Chimie, Fr.
SO PCT Int. Appl., 33 pp.
CODEN: PIXXD2
DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9903948	A1	19990128	WO 1998-FR1514	19980710
	W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
	FR 2766203	A1	19990122	FR 1997-9087	19970717
	FR 2766203	B1	20020524		
	AU 9887343	A1	19990210	AU 1998-87343	19980710
	EP 998540	A1	20000510	EP 1998-938729	19980710
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	NO 2000000208	A	20000317	NO 2000-208	20000114
	US 2002137635	A1	20020926	US 2001-82555	20011022
PRAI	FR 1997-9087	A	19970717		
	WO 1998-FR1514	W	19980710		
	US 2000-462995	A1	20000114		

AB Guar-free aq. fluids for use in oil exploration contains **deacetylated xanthan gum**, in the form of a **pentamer**, which is combined with at least one compd. that increases the ionic strength of the medium and a std. filtrate reducing compd. Compds. that increase the ionic strength include org. or mineral acids, salts (e.g., halides, sulfates, carbonates, bicarbonates, silicates, phosphates, and formates), and alkali metal and alk. earth metal formates and acetates. The fluids typically contain 0.01-2 wt.% **deacetylated** guar gum, 5000-110,000 ppm of compds. that increase the ionic strength of the medium, and 0-1 wt.% of a filtrate-reducing compd. Typical filtrate-reducing compds. include cellulose derivs., polyacrylamides, polyacrylates, succinoglycans, natural starches and starch derivs., and carbons. Other components present can include dispersants (e.g., polyphosphates, tannins, polynaphthalenesulfonates, etc.), oxygen scavengers, and densifying agents (e.g., zinc salts, iron oxides, barite, etc.).

IT **11138-66-2D, Xanthan gum, deacetylated**
RL: TEM (Technical or engineered material use); USES (Uses)
(drilling fluids contg.; **deacetylated xanthan gum**-contg. guar-free aq. drilling fluids for petroleum wells)

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Esso Production Researc	1967			GB 1080248 A	
Getty Scientific Develo	1997			EP 0765939 A	HCAPLUS
Jeanes, A	1963			US 3096293 A	HCAPLUS
Mondshine, T	1980			US 4186803 A	HCAPLUS
Vanderslice, R	1989			US 4868293 A	HCAPLUS
Wellington, S	1980			US 4218327 A	HCAPLUS

L64 ANSWER 8 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1996:309789** HCAPLUS
DN **125:8943**
TI Influence of **acyl** substituents on the interaction of **xanthans** with plant polysaccharides
AU Ross-Murphy, S. B.; Shatwell, K. P.; Sutherland, I. W.; Dea, I. C. M.
CS Division Life Sciences, King's College London, London, W8 7AH, UK
SO Food Hydrocolloids (**1996**), 10(1), 117-122
CODEN: FOHYES; ISSN: 0268-005X
PB Oxford University Press
DT Journal
LA English
AB Small deformation rheol. and measurement of crit. gelling concns. has been carried out to study the interactions between solns. of microbially cultured variant **xanthans** and chem. modified samples of this polymer, with three plant polysaccharides, guar **gum**, locust bean **gum** and konjac mannan. Using these methods we have been able to assess the influence of the **acyl** substituents upon the interaction behavior.

IT **11138-66-2, Xanthan**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(**acyl** substituents effect on interaction of **xanthans** with plant polysaccharides)

L64 ANSWER 9 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:309785 HCAPLUS
DN 125:8939
TI Release of disordered **xanthan** oligomers upon partial acid hydrolysis of double-stranded **xanthan**
AU Stokke, Bjorn Torger; Christensen, Bjorn Erik
CS Department Physics, University Trondheim, Trondheim, N-7034, Norway

SO Food Hydrocolloids (1996), 10(1), 83-89
CODEN: FOHYES; ISSN: 0268-005X
PB Oxford University Press
DT Journal
LA English
AB Double stranded **xanthan** was subjected to acid hydrolysis and was found to yield **xanthans** with partly truncated sidechains and decreasing mol. wt. The depolymn. kinetics of **xanthan** deviated from that of dispersed single-stranded polymers by revealing an initial regime in which the **xanthan** prepn. showed only minor decrease in mol. wt. (referring to the intact **polypentamer** repeating unit). Subsequently, a more rapid degrdn. occurred. In the latter phase an oligomeric fraction yielding an overall bimodal mol. wt. distribution, also started to appear in the mol. wt. distribution. This oligomeric fraction had the same chem. compn. as the rest of the sample. Exptl. detn. of the mass per unit length suggests that the partly hydrolyzed **xanthans** also possessed the basic duplex structure of intact **xanthan**. These data can be accounted for by taking the cooperative nature of the dimerization occurring on pairing two **xanthan** chains into account in a Monte Carlo model for depolymn. of duplex polymers.
IT **11138-66-2, Xanthan**
RL: RCT (Reactant); RACT (Reactant or reagent)
(double-stranded; release of disordered **xanthan** oligomers on partial acid hydrolysis of)

L64 ANSWER 10 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:306131 HCAPLUS
DN 124:346429
TI Screening for synergistic interactions in dilute polysaccharide solutions
AU Goycoolea, F. M.; Morris, E. R.; Gidley, M. J.
CS Silsoe College, Silsoe, Cranfield University, Bedford, MK45 4DT, UK
SO Carbohydrate Polymers (1996), Volume Date 1995, 28(4), 351-358
CODEN: CAPOD8; ISSN: 0144-8617
PB Elsevier
DT Journal
LA English
AB A simple viscometric approach was used to screen for binding interactions between different polysaccharides in very dil. soln. where exclusion effects should be negligible. The method involves prepg. stock solns. to approx. the same, low viscosity (.eta.sp .apprxeq. 1), dialyzing to identical ionic conditions, mixing in various proportions, and looking for departures from the initial common viscosity. Mixts. of **xanthan gum** or **de-acetylated xanthan gum** with carob gum (I) or konjac mannan (II) show massive enhancement of viscosity, as anticipated from the formation of synergistic gels at higher concns. However, no viscosity changes upon mixing with I or II were obsd. for other conformationally ordered bacterial polysaccharides (welan and rhamsan) or for alginate and pectin with sufficient Ca2+ to induce almost complete conversion to the dimeric "egg box" form, demonstrating that conformational rigidity is not, in itself, sufficient for other polysaccharides to form heterotypic junctions with mannan or glucomannan chains. Interactions of carrageenans with I depended on both conformation and the extent of aggregation. Mixts. of I with K+ .kappa.-carrageenan (III) in 100 mM KCl (which is known to promote extensive aggregation of double helixes) gave erratic values for rotational viscosity and showed typical gel-like mech. spectra under low-amplitude oscillation. Disordered carrageenans, i.e., K+ III in water and K+ .lambda.-carrageenan in 100 mM KCl, showed no evidence of interaction with I. Neg. results were also obtained for .iota.-carrageenan (IV) under ionic conditions believed to promote ordering without significant aggregation (100 mM KCl). However, under conditions where limited aggregation might be expected, e.g. IV in 90 mM

CaCl2 and Me4N+ III in 150 mM Me4NI, significant decreases in viscosity were obsd. upon mixing with I, which may indicate some intermol. assocn. but without the formation of an extended network structure.

L64 ANSWER 11 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:72500 HCAPLUS
DN 124:261539
TI Dynamic simulations of the molecular conformations of wild type and mutant **xanthan** polymers suggest that conformational differences may contribute to observed differences in viscosity
AU Levy, Samuel; Schuyler, Scott C.; Maglothin, Ronald K.; Staehelin, L. Andrew
CS Dep. Mol. Cell. Dev. Biol., Univ. Colorado, Boulder, CO, 80309-0347, USA
SO Biopolymers (1996), 38(2), 251-72
CODEN: BIPMAA; ISSN: 0006-3525
PB Wiley
DT Journal
LA English
AB **Xanthan gum** is an exopolysaccharide secreted by the bacterium Xanthomonas campestris whose ability to make solns. viscous at low concns. and over a pH and temp. range have generated much interest in both academic and industrial environments. Mutant Xanthomonas strains have been derived that produce **xanthan gums** with an altered or variant subunit chem. structure and different measured viscosities when compared with the wild type (wt) form of the polymer. Two variant gums were targeted as potentially interesting in this study, these being the **nonacetylated** tetramer (natet) and the **acetylated** tetramer (atet), which both lack a side-chain terminal mannose residue and in one case (natet) lacks an acetate group on an internal mannose residue. Solns. of these tetrameric gums possess viscosities higher (natet) and lower (atet) than the wt gum, and therefore we have attempted to det. whether these mols. possess unique conformational preferences when compared with the wt and with each other. In this manner we can initiate an understanding of how a polysaccharide's conformation contributes to its soln. properties. The GEGOP software permits a sampling of the static and dynamic equil. states of carbohydrate mols., and this software was employed to calc. equil. states of representative oligosaccharides with chem. structures representative of **xanthan**-like mols. Energy minimization techniques revealed similar local min. for all three mols. Some of these min. are comprised of elongate backbone conformations (A type) in which side chains fold onto backbone surfaces. Other min. with A backbones possessed side chains in less intimate backbone contact esp. when calcns. were performed with a low dielec. const. This phenomenon was particularly pronounced in the wt mol. where an increased no. of neg. charged side-chain residues experience charge repulsion resulting in reduced side-chain-backbone contact. Metropolis Monte Carlo (MMC) dynamic simulations performed with an elevated temp. factor (1000 K) allowed a better qual. representation of conformational space than 300 K simulations. Employing a nonhierarchical cluster anal. method (population d. profile: PDP) coupled with a classification scheme, it was possible to partition resulting MMC data sets into conformational families. This anal. revealed that in simulations performed with different dielec. const. values (10, 25, and .infin.) all mols. possessed primarily A-type backbones. Less elongate, more open helical backbone forms (B, C, D, J, and Flat-a) did occur during the simulations but were populated to a lesser extent. In the natet mol. significantly open helical backbones existed (E, F, G, H, and I) that did not occur in the lower viscosity wt and atet mols. PDP clustering methods and subsequent conformational classification applied to the first residue (mannose) of the side chain permitted a detn. of side-chain orientation. Comparison of all three mols. indicated a larger population of side-chain conformational families in less direct backbone contact for the wt mol. than either of the variant mols. (natet/atet) suggesting that the side

chains in the wt are more flexible. Thus, a major conformational difference between the high viscosity natet and the lower viscosities of the wt/atet is the increased amt. of open helical backbone in the natet. In addn., the significant difference between the higher viscosity wt and the lower viscosity atet is the increase side-chain flexibility in the wt. We hypothesize that conformational differences of this kind could form a partial explanation of the obsd. differences in viscosity between these **xanthan**-like polymers.

IT **11138-66-2, Xanthan**
RL: PRP (Properties)
(dynamics simulations of the mol. conformations of wild type and mutant **xanthans** suggest that conformational differences may contribute to obsd. differences in viscosity)

L64 ANSWER 12 OF 40 HCAPLUS
AN **1996:68353** HCAPLUS
DN **124:179354**
TI Synergistic gelation of galactomannans or konjac glucomannan: Binding or exclusion?
AU Goycoolea, F. M.; Foster, T. J.; Richardson, R. K.; Morris, E. R.; Gidley, M. J.
CS Cranfield Institute Technology, Silsoe College, Bedford, MK45 4DT, UK
SO Gums and Stabilisers for the Food Industry 7, [Proceedings of the International Conference], 7th, Wrexham, UK, July 1993 (**1994**), Meeting Date 1993, 333-44. Editor(s): Phillips, Glyn O.; Williams, Peter A.; Wedlock, David J. Publisher: IRL Press, Oxford, UK.
CODEN: 62HUAF
DT Conference
LA English
AB Synergistic gels of **xanthan** or **deacetylated xanthan** with locust bean **gum** (LBG) or konjak mannan (KM) melt and set at .apprx.60.degree., with no thermal hysteresis. Gel-like rheol. persists to very low concns. (0.02% w/v). Gelation occurs with the **xanthan** component in either its ordered or disordered form, and is accompanied, with KM as co-synergist, by large enthalpy changes (.DELTA.H) in DSC. Formation and melting of synergistic gels of .kappa.-carrageenan with LBG or KM, in contrast, invariably occur a few degrees above the corresponding processes for carrageenan alone. Mutual exclusion, driving formation of an interpenetrating network of LBG or KM within the carrageenan gel, would be consistent with SEM evidence, but not with double-peaking in DSC. The onset of synergistic gelation occurs when there is, on av., about one full turn of helix structure in each carrageenan chain. We therefore suggest that the most likely interpretation is that unsubstituted regions of the LBG or KM backbone bind to the helixes as they form, thus raising the temp. of ordering and gelation.

IT **11138-66-2, Xanthan gum 11138-66-2D, Xanthan gum, deacetylated**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(synergistic gelation of galactomannans or glucomannans)

L64 ANSWER 13 OF 40 HCAPLUS
AN **1996:68348** HCAPLUS
DN **124:179351**
TI **Xanthan** polytetramer: Conformational stability as a barrier to synergistic interaction
AU Foster, T. J.; Morris, E. R.
CS Cranfield Institute Technology, Silsoe College, Bedford, MK45 4DT, UK
SO Gums and Stabilisers for the Food Industry 7, [Proceedings of the International Conference], 7th, Wrexham, UK, July 1993 (**1994**), Meeting Date 1993, 281-9. Editor(s): Phillips, Glyn O.; Williams, Peter A.; Wedlock, David J. Publisher: IRL Press, Oxford, UK.
CODEN: 62HUAF

DT Conference
LA English
AB The genetically engineered polytetramer variant of **xanthan**, in which the terminal mannose residues of each side chain are absent, shows a thermoreversible conformational transition in soln. (as monitored by DSC, CD, and optical rotation). As found for **xanthan**, there is no detectable thermal hysteresis on cooling, and 1/Tm decreases linearly with ln I (where Tm is the transition midpoint temp. and I is ionic strength), but the Tm values for polytetramer are substantially higher. Native polytetramer shows normal soln. rheol., but develops some **xanthan** -like "weak-gel" properties after heating and cooling through the temp. range of the conformational transition. We suggest that the polymer, as biosynthesized, is fully ordered along each chain, but renatures with shorter ordered sequences that promote network formation. The polytetramer shows no evidence of synergistic assocn. with locust bean **gum** or konjac glucomannan, in contrast to **xanthan** and (particularly) **deacetylated xanthan**, which gave massive viscous interactions even in very dil. soln. The difference is attributed to the enthalpic stability of the polytetramer helix (.DELTA.H .sum. 8.5 J/g, in comparison with .apprx.4.0 J/g for **xanthan**) preventing conformational rearrangement into heterotypic junctions. **Nonacetylated** polytetramer (also genetically engineered) gave a similar high value of .DELTA.H and again showed no evidence of synergistic interaction. As found for **xanthan**, the absence of acetate groups lowers Tm, indicating that they contribute to the stability of the ordered structure.
IT **11138-66-2D, Xanthan gum**, polytetramer derivs.
RL: PRP (Properties)
(conformational stability as a barrier to synergistic interaction)

L64 ANSWER 14 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1995:894421** HCAPLUS
DN **123:312460**
TI Stoichiometry and Conformation of **Xanthan** in Synergistic Gelation with Locust Bean **Gum** or Konjac Glucomannan: Evidence for Heterotypic Binding
AU Goycoolea, F. M.; Richardson, R. K.; Morris, E. R.; Gidley, M. J.
CS Silsoe College, Cranfield University, Silsoe/ Bedford, BEDFORD, UK
SO Macromolecules (**1995**), 28(24), 8308-20
CODEN: MAMOBX; ISSN: 0024-9297
PB American Chemical Society
DT Journal
LA English
AB Synergistic gels of **xanthan** or **deacetylated xanthan** (DX) with locust bean **gum** (LBG) or konjac glucomannan (KM) melt and set at .apprx.60 .degree.C, with no thermal hysteresis. Gelation occurs with the **xanthan** component in either its ordered or its disordered form and, with KM as cosynergist, is accompanied by large enthalpy changes (.DELTA.H) in DSC. Gel modulus (G') and .DELTA.H increase linearly with increasing ratio of KM:DX up to .apprx.1:1, with little further change at higher ratios. Liq.-like character (tan .delta.) passes through a sharp min. at about the same compn. Mixed gels of KM with unmodified **xanthan** show similar behavior, but the max. value of .DELTA.H is lower, and the proportion of KM required to achieve this max. is higher. The heat changes (per gram of **xanthan** or DX) depend only on mixing ratio, not on total concn., arguing strongly for stoichiometric binding rather than an exclusion mechanism. With LBG in place of KM, the sol-gel transition is much wider and gives no discernible peaks in DSC. The min. in tan .delta. with varying compn., however, is still evident, again arguing for a binding process, and the moduli are higher (.apprx.3.times.). Gels incorporating KM show evidence of structural rearrangement after their initial formation (maxima in the temp. dependence of G''; shoulders in tan .delta. and in

DSC); no such effects are seen for LBG. In the light of previous X-ray diffraction studies in the condensed phase, it is suggested that initial gelation involves heterotypic junctions between **xanthan** or DX and KM or LBG, with both components in a 21 conformation, but that junctions involving KM convert to a more compact 6-fold arrangement at lower temp.

IT **11138-66-2, Xanthan 11138-66-2D, Xanthan, deacetylated**
RL: BSU (Biological study, unclassified); PEP (Physical, engineering or chemical process); BIOL (Biological study); PROC (Process)
(stoichiometry and conformation of **xanthan** in synergistic gelation with locust bean **gum** or konjac glucomannan)

L64 ANSWER 15 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1995:708226** HCAPLUS
DN **123:314302**
TI Synergistic interaction between **xanthan** and galactomannan isolated from Leucaena leucocephala de Wit
AU Pakdee, Parwadee; Tako, Masakuni; Yokohari, Tetsuo; Kinjyo, Kazuhiko; Hongo, Hujiya; Yaga, Shiryo
CS Coll. Agric., Univ. Ryukyus, Okinawa, 903-01, Japan
SO Oyo Toshitsu Kagaku (**1995**), 42(2), 105-13
CODEN: OTKAE3; ISSN: 1340-3494
PB Nippon Oyo Toshitsu Kagakkai
DT Journal
LA English
AB The non-Newtonian behavior and dynamics viscoelasticity of a series of aq. mixts. of **xanthan** and galactomannan isolated from Leucaena leucocephala de Wit were measured with a rheologiometer. At a concn. of 0.2% of total **gums**, gelation did not occur at room temp., but at a low temp. (0.degree.). A much stronger interaction was obsd. with mixts. contg. **deacetylated, deacylated,** or native **xanthan** than with depyruvated **xanthan**. The max. dynamic modulus was obtained when the ratio of **xanthan** to galactomannan was 2:1. The dynamics viscoelasticity parameters for mixts. with **deacetylated** and native **xanthan** decreased rapidly at temps. above 20 and 15.degree., resp. It was concluded that the side chains of the galactomannan mol. prevent intermol. interaction between **xanthan** and galactomannan. The results obtained support the interaction mechanism between **xanthan** and locust-bean **gum** previously proposed.

IT **11138-66-2, Xanthan**
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(synergistic interaction between **xanthan** and galactomannan isolated from leucaena leucocephala de wit)

L64 ANSWER 16 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1995:409865** HCAPLUS
DN **122:182878**
TI Studies on a viscous, gel-forming exopolysaccharide from Sphingomonas paucimobilis GS1
AU Ashtaputre, Anita A.; Shah, Avinash K.
CS Dep. Microbiol. Biotechnol. Cent., M. S. Univ. Baroda, Baroda, 390 002, India
SO Applied and Environmental Microbiology (**1995**), 61(3), 1159-62
CODEN: AEMIDF; ISSN: 0099-2240
PB American Society for Microbiology
DT Journal
LA English
AB A new strain, Sphingomonas paucimobilis GS1, accumulated 6.5 g of a highly viscous exopolysaccharide per L, using sucrose as a substrate. The anionic heteropolysaccharide contained the following, in grams per g: glucose, 0.7; galacturonic acid, 0.11; glucuronic acid, 0.07; and acetate,

0.12. The viscosity of the exopolysaccharide (4.0 g/L; 4,200 cP) was 5.5 times that of **xanthan gum** and was stable over a wide pH and temp. range as well as in the presence of NaCl. **Deacetylated** polymer produced a clear, agarlike, thermoreversible gel in the presence of cations. The gel strength of the modified polymer was four times that of agar and could withstand autoclaving.

L64 ANSWER 17 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1992:614877** HCAPLUS
DN **117:214877**
TI Synergistic interaction between **xanthan** and konjac glucomannan in aqueous media
AU Tako, Masakuni
CS Dep. Biosci. Biotechnol., Univ. Ryukyus, Nishihara, 903-01, Japan
SO Bioscience, Biotechnology, and Biochemistry (**1992**), 56(8), 1188-92
CODEN: BBBIEJ; ISSN: 0916-8451
DT Journal
LA English
AB The non-Newtonian behavior and dynamic modulus of a series of aq. mixts. of **xanthan** (native, **deacetylated,** depyruvated, and **deacylated**) and konjac glucomannan were measured with a rheogoniometer. The flow curves, at 55.degree., of a mixed soln. of **xanthan** and glucomannan showed plastic behavior at 0.1% total **gums.** At a concn. of 0.1% total **gums,** gelation occurred at room temp. A much stronger gel was obsd. in a mixt. with **deacetylated xanthan,** i.e., about twice as strong as that of a mixt. with depyruvated **xanthan.** The dynamic modulus of a mixt. of **deacylated xanthan** and glucomannan stayed at very small value in the presence of CaCl2 (6.8 mM) and urea (4.0 M). The side chains of **xanthan** were dominant in the interaction with konjac glucomannan mols.
IT **11138-66-2, Xanthan gum 11138-66-2D, Xanthan gum, deacylated**
RL: USES (Uses)
(synergistic interactions with konjac glucomannan in aq. media)

L64 ANSWER 18 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1992:61950** HCAPLUS
DN **116:61950**
TI Role of conformation and **acetylation** of **xanthan** on **xanthan**-guar interaction
AU Lopes, L.; Andrade, C. T.; Milas, M.; Rinaudo, M.
CS Inst. Macromol., Univ. Fed. Rio de Janeiro, Rio de Janeiro, 20000, Brazil
SO Carbohydrate Polymers (**1991**), Volume Date 1992, 17(2), 121-6
CODEN: CAPOD8; ISSN: 0144-8617
DT Journal
LA English
AB The synergistic effect obtained by mixing **xanthan** and guar solns. were examd. by low-shear viscosity measurements in relation to the temp. Native and **deacetylated xanthan** samples were used in mixts. in which the total polymer concns. were 1 g/L and 0.5 g/L. Gelation was obsd. for temps. <15.degree. for the native **xanthan** -guar system (wt. ratio 1/1) in 10-2 M NaCl and at 22-24.degree. for the same system in water; in this last case, it is known that the **xanthan** is in the disordered conformation. For a mixt. of **deacetylated xanthan**-guar, gelation was obsd. below 26.degree. in water. There was a stronger interaction between **deacetylated xanthan** and guar than native **xanthan** and guar because of enhanced xanthen-guar **gum** backbone assocn. in the former case.
IT **11138-66-2, Xanthan gum**
RL: PRP (Properties)

(**acetylation** and conformation of, guar **gum**-
xanthan gum interactions in relation to)

L64 ANSWER 19 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1991:635120** HCAPLUS
DN **115:235120**
TI Synergistic interaction between **deacylated xanthan** and galactomannan
AU Tako, Masakuni
CS Dep. Agric. Chem., Univ. Ryukyus, Nishihara, 903-01, Japan
SO Journal of Carbohydrate Chemistry (**1991**), 10(4), 619-33
CODEN: JCACDM; ISSN: 0732-8303
DT Journal
LA English
AB The dynamic modulus and optical rotation of a mixed soln. of denatured **xanthan** (depyruvated and **deacylated**) and galactomannan (locust-bean **gum** and guar **gum**) were measured with a rheogoniometer and a polarimeter. Gelation occurred in a mixt. of native **xanthan** with locust-bean **gum** at a concn. of 0.2% total **gums** at room temp., but not with guar **gum**. A mixt. of **deacylated xanthan** and locust-bean **gum** showed the highest dynamic modulus, .apprx.3 times as strong as that of a mixt. with depyruvated **xanthan**. The dynamic modulus of a mixt. of **deacylated xanthan** and locust-bean **gum** stayed at very small value in the presence of CaCl2 (6.8 mM) and urea (4.0 M). Possible binding sites between **deacylated xanthan** and locust-bean **gum** mols. are proposed.
IT **11138-66-2D, Xanthan gum, deacylated**
RL: USES (Uses)
(galactomannan blends, gelation of, synergism in)

L64 ANSWER 20 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1991:536533 HCAPLUS
DN 115:136533
TI Hydrolysis of **xanthan** in dilute acid: effects on chemical composition, conformation, and intrinsic viscosity
AU Christensen, Bjoern E.; Smidsrod, Olav
CS Norweg. Biopolym. Lab., Univ. Trondheim, Trondheim, N-7034, Norway
SO Carbohydrate Research (1991), 214(1), 55-69
CODEN: CRBRAT; ISSN: 0008-6215
DT Journal
LA English
AB The polysaccharide **xanthan** has been depolymd. by mild acid hydrolysis (pH 1-4) at 80.degree.. The conformational state was varied from fully ordered to partially disordered by varying the ionic strength and pH. Hydrolysis occurred mainly in the side chains, with the terminal .beta.-mannose as the most susceptible unit, yielding a continuous series of modified **xanthans** from the intact "**polypentamer**" to the "polytetramer", while retaining a high mol. wt. Depolymn. of the glucan backbone was analyzed by monitoring the intrinsic viscosity. For ordered **xanthan** the calcd. changes in the degree of polymn. as a function of time deviate strongly from that expected for random depolymn. of a single-stranded, linear polymer, but the data are in qual. agreement with the behavior of such double-stranded polymers as DNA. The formational properties of partly hydrolyzed **xanthan** were investigated by optical rotation.
IT **11138-66-2, Xanthan**
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of, in dil. acid, conformation and intrinsic viscosity effect on)

L64 ANSWER 21 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1991:516704** HCAPLUS

DN **115:116704**
TI Synergistic interaction between **xanthan** and tara-bean **gum**
AU Tako, Masakuni
CS Dep. Agric. Chem., Univ. Ryukyus, Nishihara, 903-01, Japan
SO Carbohydrate Polymers (**1991**), 16(3), 239-52
CODEN: CAPOD8; ISSN: 0144-8617
DT Journal
LA English
AB The non-Newtonian behavior and dynamic viscoelasticity of a series of aq. mixts. of **xanthan** and tara-bean **gums** were measured with a rheogoniometer. At a concn. of 0.2% of the total **gum**, gelation did not occur at room temp., but rather at a low temp. (0.degree.). A much stronger interaction was obsd. with mixts. contg. **deacetylated, deacylated,** or native **xanthan** than with depyruvated **xanthan**. The max. dynamic modulus was obtained at a **xanthan**-tara-bean **gum** ratio of 1:2. The dynamic viscoelastic parameters for mixts. with **deacetylated** and **deacylated xanthan** decreased rapidly at temps. above 25 and 20.degree., resp. The side chains of the tara-bean **gum** mol. prevented an intermol. interaction between **xanthan** and tara-bean **gums**.
IT **11138-66-2, Xanthan gum**
RL: USES (Uses)
(tara-bean **gum** mixts., viscoelasticity of, synergism in)
IT **11138-66-2D, Xanthan gum, deacylated**
RL: USES (Uses)
(tara-bean **gum** mixts., viscoelasticity of, synergism in relation to)

L64 ANSWER 22 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1991:45353** HCAPLUS
DN **114:45353**
TI Influence of the **acetyl** substituent on the interaction of **xanthan** with plant polysaccharides. III. **Xanthan** -konjac mannan systems
AU Shatwell, Karolyn P.; Sutherland, Ian W.; Ross-Murphy, Simon B.; Dea, Iain C. M.
CS Dep. Microbiol., Sch. Agric., Edinburgh, EH9 3JG, UK
SO Carbohydrate Polymers (**1990**), 14(2), 131-47
CODEN: CAPOD8; ISSN: 0144-8617
DT Journal
LA English
AB A range of **xanthans** (Na+ salt form) with varying levels of **acetyl** and pyruvic acid substitution were prepd. by culturing different strains of Xanthomonas campestris and by chem. **deacetylation** and depyruvylation. Oscillatory-shear measurements were used to characterize the interaction between these polymers and konjac mannan in deionized water and the data was analyzed statistically. The majority of the polymers interacted to form a strong thermoreversible-gel network. **Xanthan** gelled with konjac mannan only at relatively high concns. compared with **xanthan**-locust bean **gum** (LBG) systems but the gels formed had significantly higher melting and setting temps. than **xanthan**-LBG gels of the same concn. The transition from the liq. to the gel state was also much sharper. The strength of the gels was heavily dependent on the level of **acetyl** substitution.
IT **11138-66-2, Xanthan gum**
RL: PRP (Properties)
(interaction of, with Konjac mannan, **acetyl** substitution effect on)

L64 ANSWER 23 OF 40 HCAPLUS COPYRIGHT 2002 ACS

AN **1991:45352** HCAPLUS
DN **114:45352**
TI Influence of the **acetyl** substituent on the interaction of **xanthan** with plant polysaccharides. II. **Xanthan**-guar **gum** systems
AU Shatwell, Karolyn P.; Sutherland, Ian W.; Ross-Murphy, Simon B.; Dea, Iain C. M.
CS Dep. Microbiol., Sch. Agric., Edinburgh, EH9 3JG, UK
SO Carbohydrate Polymers (**1990**), 14(2), 115-30
CODEN: CAPOD8; ISSN: 0144-8617
DT Journal
LA English
AB A range of **xanthans** (Na+ salt form) with varying levels of **acetyl** and pyruvic acid substitution were prepd. by culturing different strains of Xanthomonas campestris and by chem. **deacylation** and depyruvylation. Oscillatory-shear measurements were used to characterize the behavior of **xanthan** and guar **gum** alone, and of mixts. of the 2 in deionized water; the **xanthan** under these conditions was largely in the disordered form. The mech. spectra of the blends resembled an entanglement network system and showed some features characteristic of the individual components. However, evidence from both rheol. and chirooptical measurements indicated a possible weak interaction between some low-**acetyl** **xanthans** and guar.
IT **11138-66-2, Xanthan gum**
RL: PRP (Properties)
(interaction of, with guar **gum**, **acetyl** substitution effect on)

L64 ANSWER 24 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1990:631852** HCAPLUS
DN **113:231852**
TI The influence of **acetyl** and pyruvate substituents on the helix-coil transition behavior of **xanthan**
AU Shatwell, Karolyn P.; Sutherland, Ian W.; Dea, Iain C. M.; Ross-Murphy, Simon B.
CS Dep. Microbiol., Sch. Agric., Edinburgh, EH9 3JG, UK
SO Carbohydr. Res. (**1990**), 206(1), 87-103
CODEN: CRBRAT; ISSN: 0008-6215
DT Journal
LA English
AB **Xanthans** (Na+ salt form) having various contents of **acetyl** and pyruvic acid groups were prepd. by culturing different strains of Xanthomonas campestris and by **deacetylation** and depyruvylation. Optical rotation ([.alpha.]365) was used to characterize the helix-coil transition behavior of these polymers in deionized water. There were correlations between the **acetyl** and pyruvic acid contents and the mid-point temp. of the transition, between the pyruvic acid content and [.alpha.]365 in the high-temp.-plateau (coil) region of the curve, and between the content of pyruvic acid and the height of the transition. In deionized water, each of the polymers showed marked thermal hysteresis and a time-dependent fall in [.alpha.]365, at low temps. This behavior, which was attributed to kinetic factors, was eliminated by the addn. of NaCl. Salt also increased the melting temp. and reduced [.alpha.]365 in the low-temp.-plateau region of the curve in relation to the charge carried by the polymer. A high-pyruvate, low-**acetyl** **xanthan** exhibited unusual two-phase helix-coil transition behavior in the presence of salt.
IT **11138-66-2, Xanthan gum**
RL: PRP (Properties)
(helix-coil transition of, **acetyl** and pyruvate group effect on)

L64 ANSWER 25 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1990:424384** HCAPLUS
DN **113:24384**
TI Influence of **acetyl** and pyruvate substituents on the solution properties of **xanthan** polysaccharide
AU Shatwell, Karolyn P.; Sutherland, Ian W.; Ross-Murphy, Simon B.
CS Dep. Microbiol., Univ. Edinburgh, Edinburgh, EH9 3JG, UK
SO Int. J. Biol. Macromol. (**1990**), 12(2), 71-8
CODEN: IJBMDR; ISSN: 0141-8130
DT Journal
LA English
AB **Xanthan,** an exocellular polysaccharide produced by the plant pathogenic bacterium Xanthomonas campestris has been the subject of considerable interest in recent years because of its unusual rheol. properties in soln. (weak gel) and consequent range of application. The polymer consists of a cellulosic backbone with trisaccharide side chains linked to alternate backbone residues; **acetyl** and pyruvate substituents are carried in variable amts. on these side chains. A series of **xanthans** differing in the percentage of substituent groups and in mol. wt. range were prepd. by culturing a variety of different strains of X. campestris. All of the **xanthans** were characterized by a range of physicochem. techniques. In particular, the intrinsic viscosities at low shear rates, and at a range of ionic strengths, were detd. and the geometric persistence lengths evaluated by the Smidsrod-Haug method. Intensity light scattering measurements were made using the procedure of Coviello and co-workers to promote mol. dispersion. Despite significant differences in the **acetyl** and pyruvate contents, the mol. wt. vs mean square radius behavior of the samples did not differ substantially from each other or from those reported for other **xanthan** samples in the literature. The persistence length, detd. by the method of Schmidt et al. (120 .+-. 8 nm) was also, within exptl. error, the same for all the samples measured. These values differed considerably from those calcd. from the ionic strength dependence of intrinsic viscosity (the Smidsrod-Haug method) as reported by Tinland and Rinaudo and calcd. for these samples. This illustrates the limitations of the latter method when applied to systems where the electrostatic contribution to the persistence length is only a small fraction of the geometrical contribution. The values obtained from the light scattering measurements support other recent conclusions that the inherent stiffness of the **xanthan** macromol. is not greatly influenced by the pattern of **acyl** substitution.
IT **11138-66-2, Xanthan**
RL: PRP (Properties)
(soln. properties of, **acetyl** and pyruvate substituents effect on)

L64 ANSWER 26 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1989:595280** HCAPLUS
DN **111:195280**
TI Evidence for intramolecular associations in **xanthan** molecules in aqueous media
AU Tako, Masakuni; Nakamura, Sanehisa
CS Coll. Agric., Univ. Ryukyus, Nishihara, 903-01, Japan
SO Agric. Biol. Chem. (**1989**), 53(7), 1941-6
CODEN: ABCHA6; ISSN: 0002-1369
DT Journal
LA English
AB The non-Newtonian behavior and dynamic viscoelasticity of **deacylated xanthan** soln. were measured with a rheogoniometer. The flow curves for the **deacylated xanthan** at concns. below 0.5% approximated to shear-thinning behavior, and a plastic behavior above 0.8%. The apparent viscosity of a 0.5% soln. of **deacylated xanthan** increased with

increasing temp. up to 25, which was estd. to be a transition temp., then it decreased rapidly. The dynamic modulus of **deacylated xanthan** increased a little with increase of temp. up to 25 and 30.degree. in 0.8 and 1.0% solns., then it decreased rapidly with further increases of temp. The sp. rotation of **deacylated xanthan** stayed const. up to 25.degree., then it decreased rapidly with further increases in temp. Possible mode of intramol. assocn. between an alternate hydroxyl group at C(3) and the adjacent hemiacetal O atom of the D-glucosyl residues, and between the Me group of the **acetyl** residue and the adjacent hemiacetal O atom of the D-glucosyl residue were proposed.

IT **11138-66-2, Xanthan**
RL: PRP (Properties)
(intramol. assocn. in, in aq. media)

L64 ANSWER 27 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1988:473771** HCAPLUS
DN **109:73771**
TI Rheological properties of depyruvated **xanthan** in aqueous media
AU Tako, Masakuni; Nakamura, Sanehisa
CS Coll. Agric., Univ. Ryukyus, Nishihara, 903-01, Japan
SO Agric. Biol. Chem. (**1988**), 52(6), 1585-6
CODEN: ABCHA6; ISSN: 0002-1369
DT Journal
LA English
AB The viscosity and viscoelasticity of depyruvated **xanthan** in water were characterized. Depyruvated **xanthan** was found to have fewer intermol. assocns. than native or **deacetylated xanthans** that contained pyruvate.
IT **11138-66-2, Xanthan gum**
RL: PRP (Properties)
(viscoelasticity and viscosity of, in aq. soln., role of pyruvate interactions in)
IT **11138-66-2D, Xanthan gum**, depyruvated deriv.
RL: PRP (Properties)
(viscosity and viscoelasticity of, in aq. soln.)

L64 ANSWER 28 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:468188 HCAPLUS
DN 109:68188
TI Cloning and sequencing of xanthomonas campestris DNA encoding **xanthan gum** biosynthetic enzymes for use in manufacture of **xanthan gums** by recombinant bacteria
IN Capage, Michael A.; Doherty, Daniel H.; Betlach, Michael R.; Vanderslice, Rebecca W.
PA Getty Scientific Development Co., USA
SO PCT Int. Appl., 152 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 8705938	A1	19871008	WO 1987-US604	19870324
	W: DK, FI, JP, NO				
	RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE				
	EP 326544	A1	19890809	EP 1987-902917	19870324
	EP 326544	B1	19951004		
	R: AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE				
	JP 01502555	T2	19890907	JP 1987-502275	19870324
	JP 2612583	B2	19970521		
	AT 128731	E	19951015	AT 1987-902917	19870324
	CA 1338138	A1	19960312	CA 1987-532837	19870324

```
     NO 8704878         A     19880125       NO 1987-4878      19871123
     US 5559015         A     19960924       US 1994-352216    19941202
PRAI US 1986-842944           19860324
     US 1987-29530            19870323
     US 1986-844332           19860326
     WO 1987-US604            19870324
     US 1988-188687           19880427
     US 1989-333868           19890403
     US 1992-815615           19920107
```

AB A gene cluster encoding enzymes necessary for the biosynthesis of **xanthan gum** is isolated from X. campestris and the DNA is sequenced. Plasmids contg. these genes can be transferred to bacteria which can be grown anaerobically and/or at temps. >30.degree. thus allowing a more economical manuf. of **xanthan gum**. The genes and the enzymic activity of the corresponding proteins were identified by Tn10 mutagenesis and subsequent anal. of lipid-linked radioactive precursors of **xanthan gum**. Plasmid pRK290-H336, which contains the gum gene cluster and has a broad host range, was conjugally transferred to Pseudomonas stutzeri (from Escherichia coli). The expression of one of the enzymes, Transferase III, was detd. by Western immunoblots to be almost equiv. to that in X. campestris itself.

IT **11138-66-2DP**, **Xanthan gum**, non-pyruvylated and/or **non-acetylated 11138-66-2P**, **Xanthan gum**
RL: PREP (Preparation)
(manuf. of, with recombinant bacteria, improved culture conditions in relation to)

L64 ANSWER 29 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1988:185289** HCAPLUS
DN **108:185289**
TI Manufacture of **xanthan gums** with altered **acetylation** and/or pyruvylation using Xanthomonas compestris mutants or lysates of these mutants
IN Doherty, Daniel H.; Ferber, Donna M.; Marrelli, John D.; Vanderslice, Rebecca W.
PA Getty Scientific Development Co., USA
SO PCT Int. Appl., 37 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 4

```
     PATENT NO.         KIND  DATE           APPLICATION NO.   DATE
     ---------------    ----  --------       ---------------   --------
PI   WO 8705939         A1    19871008       WO 1987-US606     19870324 <--
         W:  DK, FI, JP, NO
         RW: AT, BE, CH, DE, FR, GB, IT, LU, NL, SE
     JP 63503198        T2    19881124       JP 1987-502340    19870324 <--
     JP 2559437         B2    19961204
     EP 323952          A1    19890719       EP 1987-902919    19870324 <--
     EP 323952          B1    19930811
         R:  AT, BE, CH, DE, FR, GB, IT, LI, LU, NL, SE
     EP 511690          A2    19921104       EP 1992-111024    19870324 <--
     EP 511690          A3    19921119
     EP 511690          B1    19970730
         R:  AT, BE, DE, FR, GB, IT, LU, NL, SE
     AT 92965           E     19930815       AT 1987-902919    19870324 <--
     EP 765939          A2    19970402       EP 1996-119095    19870324 <--
     EP 765939          A3    19970514
         R:  AT, BE, DE, FR, GB, IT, LU, NL, SE
     JP 09176205        A2    19970708       JP 1996-70588     19870324 <--
     CA 1339113         A1    19970729       CA 1987-532838    19870324 <--
```

	AT 156190	E	19970815	AT 1992-111024	19870324	<--
	NO 8704846	A	19880125	NO 1987-4846	19871120	<--
	NO 172945	B	19930621			
	NO 172945	C	19930929			
	NO 9201787	A	19880125	NO 1992-1787	19920506	<--
	US 5514791	A	19960507	US 1994-232416	19940425	<--
	US 5948651	A	19990907	US 1995-406804	19950320	<--
	US 6316614	B1	20011113	US 1995-475823	19950607	<--
	US 2002103370	A1	20020801	US 2001-986803	20011113	<--
PRAI	US 1986-842945	A	19860324	<--		
	US 1986-844435	A	19860326	<--		
	US 1987-29090	A	19870323	<--		
	US 1985-762878	A2	19850806	<--		
	EP 1987-902919	A	19870324	<--		
	EP 1992-111024	A3	19870324	<--		
	JP 1987-502340	A3	19870324	<--		
	NO 1987-4846	A1	19870324	<--		
	WO 1987-US606	W	19870324	<--		
	US 1989-384621	B2	19890725	<--		
	US 1990-566875	B2	19900613	<--		
	US 1991-696732	B1	19910507	<--		
	US 1992-928726	B1	19920813	<--		
	US 1994-232416	A3	19940425	<--		
	US 1995-475823	A3	19950607	<--		

AB X. campestris Mutants are prepd. which are deficient in an enzyme of the **xanthan gum** biosynthetic pathway (i.e. ketalase or **acetylase**) and are used to prep. **non-acetylated** and under- or non-pyruvylated **xanthan gum**. X. campestris X1006, contg. a Tn10-inactivated **acetylase**, and mutant X921, contg. a Tn10-inactivated ketalase, were grown overnight at 30.degree. in broth contg. 2% glucose. The **xanthan gums** were prepd. by pptn. with org. solvents from the cell-free medium. HPLC confirmed that the former produced **non-acetylated**, and the latter non-pyruvylated **xanthan gum**. The non-pyruvylated **gum** has low viscosity at fermn. temp. but viscosity essentially equiv. to wild-type **gum** at higher temp. (80.degree.). The **non-acetylated gum** produces solns. of greater viscosity than either wild-type or com. available, chem.-**deacetylated xanthan gum** at comparable concns.

IT **11138-66-2DP, non-acetylated** or under- or non-pyruvylated
RL: BMF (Bioindustrial manufacture); BIOL (Biological study); PREP (Preparation)
(manuf. of, by Xanthomonas campestris mutants)

L64 ANSWER 30 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1988:167837** HCAPLUS
DN **108:167837**
TI Influence of **acetyl** and pyruvate contents on rheological properties of **xanthan** in dilute solution
AU Callet, Francoise; Milas, Michel; Rinaudo, Marguerite
CS Cent. Rech. Macromol. Veg., Univ. Sci., Technol. Med. Grenoble, Saint-Martin d'Heres, 38402, Fr.
SO Int. J. Biol. Macromol. (**1987**), 9(5), 291-3
CODEN: IJBMDR; ISSN: 0141-8130
DT Journal
LA English
AB The role of **acetyl** and pyruvate groups on rheol. properties of **xanthan** in dil. solns. was investigated. For this purpose, a series of **xanthan** derivs. were prepd. by chem. hydrolysis from the same original sample, i.e. **acetyl**-free, pyruvate-free, **acetyl** and pyruvate-free **xanthans**. Conformational

transitions of the 4 samples (native and modified **xanthans**) were followed by measuring optical rotation as a function of temp. Values of midpoint transition (Tm) thus obtained indicate that **acetyl** groups have a stabilizing effect on the ordered form of **xanthan**, whereas pyruvate groups have an opposite effect. After partial depolymn. by sonication, viscosities of the 4 samples were studied as a function of polymer concn. (below overlap concn. C*) and mol. wt. Unique curves were obtained for the abs. viscosity [.eta.] vs. mol. wt. and specific viscosity vs. the overlap parameter C[.eta.] for the 4 samples. This result shows that **acetyl** and pyruvate contents have no influence either on **xanthan** dil. soln. viscosity or on its intrinsic viscosity at a given mol. wt.

IT **11138-66-2D, deacetylated** and depyruvylated
RL: PRP (Properties)
(rheol. behavior and conformation of)

IT **11138-66-2, Xanthan**
RL: PRP (Properties)
(rheol. properties and conformation of, **acetyl** and pyruvate groups effect on)

L64 ANSWER 31 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1986:572914** HCAPLUS
DN **105:172914**
TI D-Mannose-specific interaction between **xanthan** and D-galacto-D-mannan
AU Tako, Masakuni; Nakamura, Sanehisa
CS Dep. Agric. Chem., Univ. Ryukyus, Okinawa, 903-01, Japan
SO FEBS Lett. (**1986**), 204(1), 33-6
CODEN: FEBLAL; ISSN: 0014-5793
DT Journal
LA English
AB A gelation occurred in a mixed soln. of **xanthan** and locust-bean **gum** at room temp.; in contrast, gelation did not occur in a soln. of **xanthan** and guar **gum**. The max. dynamic modulus was obtained when the mixing ratio of **xanthan** and locust-bean **gum** was 1:2 at 0.2% total **gums**. A mixt. of **deacetylated xanthan** and locust-bean **gum** showed the highest dynamic modulus, about twice that of the mixt. of native **xanthan**. The intermol. interaction between **xanthan** and locust-bean **gum** might occur between the side chains of the former and back-bone of the latter mols. in a lock-and-key arrangement.

IT **11138-66-2**
RL: PRP (Properties)
(interaction of, with polysaccharide **gums**)

L64 ANSWER 32 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1986:535845** HCAPLUS
DN **105:135845**
TI Reactions in dispersions of different phases
IN Fujishige, Norinaga; Numajiri, Rikio; Iegi, Masahiro
PA Agency of Industrial Sciences and Technology, Japan; Kashima Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 61120802	A2	19860607	JP 1984-241791	19841116 <--
	JP 01033481	B4	19890713		

AB Polymers (100 parts) forming viscous aq. solns. are dispersed or dissolved in >100 parts org. polar solvents and 20-300 parts water, dispersed in

nonpolar solvents to form water-in-oil-type emulsions, and allowed to react with reagents. The reactions are alkoxylation, crosslinking, **deacetylation**, acetalization or ketalization, and hydrolysis. Thus, **xanthan gum** reacted with epichlorohydrin to give a product having degree of substitution 2.0.

IT **11138-66-2**
RL: RCT (Reactant)
(reaction of, with epichlorohydrin, in water-in-oil emulsions)

L64 ANSWER 33 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1985:202772** HCAPLUS
DN **102:202772**
TI Synergistic interaction between **xanthan** and guar **gum**
AU Tako, Masakuni; Nakamura, Sanehisa
CS Dep. Agric. Chem., Univ. Ryukyus, Okinawa, 903-01, Japan
SO Carbohydr. Res. (**1985**), 138(2), 207-13
CODEN: CRBRAT; ISSN: 0008-6215
DT Journal
LA English
AB The non-Newtonian behavior and dynamic viscoelasticity of a series of aq. mixts. of **xanthan** [**11138-66-2**] and guar **gum** [9000-30-0] were measured with a rheogoniometer. At 0.2% of total **gums**, gelation did not occur at room temp. but occurred at a low temp. (0.degree.). A much stronger interaction was obsd. with a mixt. of **deacetylated xanthan** than that with native **xanthan**. The max. dynamic modulus was obtained when the ratio of **xanthan** to guar **gum** was 2:1. The transition temps. of dynamic viscoelasticity for mixts. with native and **deacetylated xanthan** were obsd. at 25 and 30.degree., resp. Apparently, the side chains of the guar **gum** mol. prevent an intermol. interaction with the side chains of the **xanthan** mol. An intermol. interaction between **xanthan** and guar **gum** at low temp. might be promoted between the periphery of the side chains of the **xanthan** mol. and the backbone of the guar **gum** mol. and dissocn. takes place at the transition temp.
IT **11138-66-2**
RL: BIOL (Biological study)
(gelation and rheol. of guar **gum** with)

L64 ANSWER 34 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1985:94471** HCAPLUS
DN **102:94471**
TI Rheological aspects of the intermolecular interaction between **xanthan** and locust bean **gum** in aqueous media
AU Tako, Masakuni; Asato, Atsushi; Nakamura, Sanehisa
CS Fac. Agric., Univ. Ryukyus, Okinawa, 903-01, Japan
SO Agric. Biol. Chem. (**1984**), 48(12), 2995-3000
CODEN: ABCHA6; ISSN: 0002-1369
DT Journal
LA English
AB Non-Newtonian behavior and dynamic viscoelasticity of a series of aq. mixed solns. of **xanthan** [**11138-66-2**] and locust bean **gum** [9000-40-2] were measured using a rheogoniometer, and the rheol. properties were analyzed. A gelation occurred in the mixt. at 0.2% total **gums** at room temp. The flow curves of the mixt. solns. showed a yield value and approximated to plastic behavior at 50.degree.. The max. dynamic modulus was obtained when the mixing ratio of **xanthan** to locust bean **gum** was 1:2, while comparable high moduli were also obtained in the mixing ratio of 1:3 or 1:4. A mixt. of **deacetylated xanthan** and locust bean **gum** showed the highest dynamic modulus, about 2 times that of the mixt. of native or Na-form **xanthan**. The dynamic modulus of the mixts. decreased rapidly with increasing temp. In contrast, the dynamic

viscosity was scarcely changed during increasing temp. in the mixing ratio of 2:1. The dynamic modulus was decreased by addn. of urea (4.0M), NaCl (0.1%), and MgCl2. Intermol. interaction between **xanthan** and locust bean **gum** might occur between the side chains of the former and backbone of the latter, as in a lock-and-key effect.

IT **11138-66-2**
RL: BIOL (Biological study)
(rheol. of, locust bean **gum** effect on)

L64 ANSWER 35 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1985:77399** HCAPLUS
DN **102:77399**
TI Rheological properties of **deacetylated xanthan** in aqueous media
AU Tako, Masakuni; Nakamura, Sanehisa
CS Fac. Agric., Univ. Ryukyus, Okinawa, 903-01, Japan
SO Agric. Biol. Chem. (**1984**), 48(12), 2987-93
CODEN: ABCHA6; ISSN: 0002-1369
DT Journal
LA English
AB Flow properties of aq. **deacetylated xanthan gum** solns. could be approximated to pseudoplastic behavior at <0.1% but to plastic behavior above 0.3%. The flow indexes in the power law for the **deacetylated xanthan** were somewhat different at various concns. The apparent viscosity of **deacetylated xanthan** decreased with increasing temp. at relatively low concns. from 0.1 to 0.5%, however, it increased with increasing temp., showed a max. value at 40.degree., and decreased gradually at 1.0%. Compared with native **xanthan**, **deacetylated** material showed higher dynamic viscoelasticity at high concns. The dynamic viscoelasticity of **deacetylated xanthan** decreased with increasing temp. at various concns. The dynamic viscoelasticity of **deacetylated xanthan** was decreased by addn. of urea (4.0M). This suggests that acetate residues, which are attached to the inner mannose residues of the side chains, contribute to the intramol. assocn., and that the side chains of **xanthan** become more flexible after **deacetylation**.
IT **11138-66-2D, deacetylated**
RL: BIOL (Biological study)
(rheol. of)

L64 ANSWER 36 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1984:612999** HCAPLUS
DN **101:212999**
TI Hygroscopic modified polysaccharides
PA Agency of Industrial Sciences and Technology, Japan; Kashima Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	JP 59142201	A2	19840815	JP 1983-16226	19830204	<--
	JP 63022201	B4	19880511			

AB Polysaccharides **deacetylated** with an alkyl alcoholate or NH3 are hygroscopic. Thus, 0.12 g Na was treated with 100 mL MeOH to give 1.5 g Na methylate [124-41-4] which was reacted with **xanthan gum** (I) [**11138-66-2**] to give modified I with good hygroscopicity.
IT **11138-66-2**
RL: RCT (Reactant)
(**deacetylation** of, with sodium methylate or ammonia)

IT **11138-66-2DP, deacetylated**
RL: PREP (Preparation)
(hygroscopic, manuf. of)

L64 ANSWER 37 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1983:74177** HCAPLUS
DN **98:74177**
TI Modified **xanthan** - its preparation and viscosity
AU Bradshaw, I. J.; Nisbet, B. A.; Kerr, M. H.; Sutherland, I. W.
CS Dep. Microbiol., Edinburgh Univ., Edinburgh, EH9 3JG, UK
SO Carbohydr. Polym. (**1983**), 3(1), 23-38
CODEN: CAPOD8
DT Journal
LA English
AB The hydrolysis of **xanthan gum** (I) [**11138-66-2**
] in soln. with (0.5%; 10 mL) 4-5 mM trifluoroacetic acid for 90 min at 100.degree. resulted in optimum removal of pyruvic acid acetal and **acetyl** groups, and under these conditions no low mol. wt. carbohydrate-contg. material was released. A comparison of the viscosity of native and modified I in H2O and 1% KCl showed that depyruvylation and **deacetylation** have little effect on soln. viscosity of shear rates between 8.8 and 88.3 s-1.
IT **11138-66-2**
RL: USES (Uses)
(**deacetylation** and depyruvylation of, with trifluoracetic acid)
IT **11138-66-2D, deacetylated**, depyruvylated
RL: PRP (Properties)
(soln. viscosity of)

L64 ANSWER 38 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1980:551994** HCAPLUS
DN **93:151994**
TI **Deacetylated** borate-biosynthetic **gum** compositions
IN Cottrell, Ian W.; Racciato, Joseph S.
PA Merck and Co., Inc., USA
SO U.S., 4 pp. Cont.-in-part of U.S. Ser. No. 891,575, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE		APPLICATION NO.	DATE	
PI	US 4214912	A	19800729		US 1979-45493	19790604	<--
PRAI	US 1978-871279		19780123	<--			
	US 1978-891575		19780330	<--			

AB Treatment of **xanthan gum** (I) with borax (II) in the presence of alkalies gives product with enhanced dispersibility in H2O. Thus, a mixt. of 6 g II, 100 mL H2O, and .apprx.19 L beer contg. .apprx.2.5% I was added to 150 mL 5 N NaOH and stirred for 4 h at 40.degree. to give **deacetylated** I, a 1% soln. of which showed a viscosity of 1110 cP at pH 8.0 after storage of 2 h.
IT **11138-66-2D, deacetylated**
RL: USES (Uses)
(borax-treated, with high dispersibility in water)

L64 ANSWER 39 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN **1979:591696** HCAPLUS
DN **91:191696**
TI Gelled compositions based on galactomannans and **xanthan**
PA CECA S. A., Fr.
SO Fr. Demande, 25 pp.
CODEN: FRXXBL

DT Patent
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	FR 2402678	A1	19790406	FR 1977-27467	19770912	<--
	FR 2402678	B1	19800321			
	EP 1192	A1	19790321	EP 1978-400084	19780830	<--
	EP 1192	B1	19811223			
	R: CH, DE, GB, NL					
	US 4369125	A	19830118	US 1980-161322	19800620	<--
PRAI	FR 1977-27467		19770912 <--			
	US 1978-935944		19780825 <--			

AB Mixts. of **deacetylated xanthan gum** (I) [**11138-66-2**] (totally or partially **deacetylated**) with 1 or more galactomannan (II) [11078-30-1] at I/II ratios of 15:85 to 9:1 formed stronger edible gels and thickening agents than did similar mixts. contg. regular (**acetylated**) **xanthan gum**.
For example a I-carob **gum** [9000-40-2] mixt. at 30:70 gave a gel with rigidity .apprx.75% greater and cohesion .apprx.70% greater than of a gel prepd. with regular (**acetylated**) **xanthan gum**. The gel strength of gels contg. I was affected less by salts than were those contg. regular **xanthan gum**.

IT **11138-66-2D, deacetylated**
RL: BIOL (Biological study)
(gels contg. galactomannan and)

L64 ANSWER 40 OF 40 HCAPLUS COPYRIGHT 2002 ACS
AN 1979:543066 HCAPLUS
DN 91:143066
TI Xanthomonas biopolymer for use in the displacement of oil from partially-exhausted deposits
IN Wernau, William Charles
PA Pfizer Inc., USA
SO Ger. Offen., 21 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 2848894	A1	19790517	DE 1978-2848894	19781110
	DE 2848894	C2	19830203		
	US 4296203	A	19811020	US 1977-851757	19771115
	DK 7803891	A	19790516	DK 1978-3891	19780904
	CA 1113875	A1	19811208	CA 1978-314034	19781024
	BE 871955	A1	19790514	BE 1978-191678	19781113
	GB 2008600	A	19790606	GB 1978-44319	19781113
	GB 2008600	B2	19820324		
	BR 7807431	A	19790724	BR 1978-7431	19781113
	NL 7811234	A	19790517	NL 1978-11234	19781114
	FR 2408653	A1	19790608	FR 1978-32084	19781114
	FR 2408653	B1	19840427		
	JP 54145290	A2	19791113	JP 1978-140398	19781114
	JP 56028921	B4	19810704		
	JP 56085292	A2	19810711	JP 1980-151313	19801028
	JP 57022321	B4	19820512		
	JP 56085293	A2	19810711	JP 1980-151314	19801028
	JP 57022322	B4	19820512		
	JP 56085294	A2	19810711	JP 1980-151315	19801028
	JP 57022323	B4	19820512		
	JP 56085284	A2	19810711	JP 1980-151316	19801028
	US 4340678	A	19820720	US 1981-222388	19810105

```
     US 4352741        A    19821005      US 1981-269681   19810602
PRAI US 1977-851757         19771115
AB   The displacement medium is a pyruvate-free xanthan gum
     (I)  [11138-66-2] slurry built up by aerobic fermn. of
     Xanthomonas campestris (ATCC 31313) in an aq. culture contg. a hydrocarbon
     and a source of N and trace elements until the slurry contains 100 ppm I.
     The slurry has a reduced ionic nature that can be further reduced by
     deacetylation, thus minimizing problems with Ca2+ in the
     underground formation.  The slurry is used in injection solns. contg.
     .gtoreq.7% salt for displacement of oil from partially exhausted
     formations.
IT   11138-66-2
     RL: USES (Uses)
        (slurries, displacement media, for enhanced petroleum recovery)


=> fil wpix
FILE 'WPIX' ENTERED AT 08:55:27 ON 10 OCT 2002
COPYRIGHT (C) 2002 THOMSON DERWENT

FILE LAST UPDATED: 07 OCT 2002              <20021007/UP>
MOST RECENT DERWENT UPDATE           200264   <200264/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> SLART (Simultaneous Left and Right Truncation) is now
    available in the /ABEX field. An additional search field
    /BIX is also provided which comprises both /BI and /ABEX <<<

>>> The BATCH option for structure searches has been
    enabled in WPINDEX/WPIDS and WPIX  <<<

>>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES,
    SEE http://www.derwent.com/dwpi/updates/dwpicov/index.html <<<

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
    PLEASE VISIT:
 http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
    GUIDES, PLEASE VISIT:
    http://www.derwent.com/userguides/dwpi_guide.html <<<

=> d all abeq tech abex tot

L77  ANSWER 1 OF 8  WPIX (C) 2002 THOMSON DERWENT
AN   1999-132209 [11]   WPIX
DNC  C1999-038740
TI   Fluids for oil mining - comprises of a de-acetylated
     xanthane gum and a compound increasing the medium ionic
     strength.
DC   A11 A14 A97 E37 H01 Q49
IN   LANGLOIS, B
PA   (RHOD) RHODIA CHIM
CYC  82
PI   WO 9903948    A1 19990128 (199911)* EN    33p    C09K007-02
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SZ UG ZW
         W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE
            GH GM HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK
            MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US
            UZ VN YU ZW
```

```
     FR 2766203    A1 19990122 (199911)              C09K007-02
     AU 9887343    A  19990210 (199925)              C09K007-02
     NO 2000000208 A  20000317 (200025)              C09K000-00
     EP 998540     A1 20000510 (200027)  FR          C09K007-02
         R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
     CN 1267320    A  20000920 (200063)              C09K007-02
     MX 2000000600 A1 20001001 (200158)              C08B037-00
ADT  WO 9903948 A1 WO 1998-FR1514 19980710; FR 2766203 A1 FR 1997-9087
     19970717; AU 9887343 A AU 1998-87343 19980710; NO 2000000208 A WO
     1998-FR1514 19980710, NO 2000-208 20000114; EP 998540 A1 EP 1998-938729
     19980710, WO 1998-FR1514 19980710; CN 1267320 A CN 1998-808299 19980710;
     MX 2000000600 A1 MX 2000-600 20000117
FDT  AU 9887343 A Based on WO 9903948; EP 998540 A1 Based on WO 9903948
PRAI FR 1997-9087      19970717
IC   ICM  C08B037-00; C09K000-00; C09K007-02
     ICS  E21B021-06; E21B043-22; E21B043-25
AB   WO   9903948 A UPAB: 19990316
```

Fluid free of guar for oil mining is claimed. It consists of **de-acetylated xanthane gum**, in a **polypentamer** form and a compound increasing the medium ionic strength. It further comprises a filtrate reducer and a fluidifying or dispersing agent with a concentration of 0-1 %, an oxygen sensor with a concentration of 0-0.25 %, all with respect to the total weight of the fluid.

USE - As a filtrate for oil mining.

```
     Dwg.0/1
FS   CPI GMPI
FA   AB; DCN
MC   CPI: A10-E09; A12-W10A; E05-A; E05-B01; E31; E33; E34; H01-B06

L77  ANSWER 2 OF 8  WPIX (C) 2002 THOMSON DERWENT
AN   1998-120375 [11]   WPIX
CR   1998-110557 [10]; 1998-120374 [11]
DNC  C1998-039555
TI   Composition of amorphous cellulose nano-fibrils - used as viscosity
     modifier in food, cosmetic and detergent products and building materials,
     and in fluids used in oil extraction.
DC   A11 A96 A97 D13 D21 D25 E19 H01 L02
IN   BENCHIMOL, J; CANTIANI, R; GUERIN, G; SENECHAL, A; VINCENT, I;
     LANGLOIS, B
PA   (RHOD) RHODIA CHIM; (RHON) RHONE-POULENC CHIM; (BENC-I) BENCHIMOL J;
     (CANT-I) CANTIANI R; (GUER-I) GUERIN G; (SENE-I) SENECHAL A; (VINC-I)
     VINCENT I
CYC  69
PI   WO 9802487    A1 19980122 (199811)* FR    35p    C08L001-02
        RW: AT BE CH DE DK EA ES FI FR GB GH GR IE IT KE LS LU MC MW NL OA PT
            SD SE SZ UG ZW
         W: AL AU BA BB BG BR CA CN CU CZ EE GE HU IL IS JP KP KR LC LK LR LT
            LV MG MK MN MX NO NZ PL RO RU SG SI SK TR TT UA US UZ VN
     FR 2751659    A1 19980130 (199812)        19p    C08L001-00
     AU 9736974    A  19980209 (199823)               C08L001-02
     EP 912634     A1 19990506 (199922)  FR           C08L001-02
         R: AT BE CH DE DK ES FR GB GR IE IT LI NL PT SE
     SK 9900034    A3 19990712 (199939)               C08L001-02
     BR 9710338    A  19990817 (199954)               C08L001-02
     HU 9903102    A2 20000228 (200020)               C08L001-02
     JP 2000503704 W  20000328 (200026)        41p    C08L001-02
     AU 723465     B  20000824 (200045)               C08L001-02
     US 6224663    B1 20010501 (200126)               C08L001-02
     US 2001004869 A1 20010628 (200138)               D21C009-00
     JP 3247391    B2 20020115 (200206)        14p    C08L001-02
ADT  WO 9802487 A1 WO 1997-FR1291 19970711; FR 2751659 A1 FR 1996-9062
     19960715; AU 9736974 A AU 1997-36974 19970711; EP 912634 A1 EP 1997-933723
```

19970711, WO 1997-FR1291 19970711; SK 9900034 A3 WO 1997-FR1291 19970711, SK 1999-34 19970711; BR 9710338 A BR 1997-10338 19970711, WO 1997-FR1291 19970711; HU 9903102 A2 WO 1997-FR1291 19970711, HU 1999-3102 19970711; JP 2000503704 W WO 1997-FR1291 19970711, JP 1998-505682 19970711; AU 723465 B AU 1997-36974 19970711, WO 1997-FR1291 19970711; US 6224663 B1 WO 1997-FR1291 19970711, US 1999-214774 19990908; US 2001004869 A1 Div ex US 1999-214774 19990908, US 2001-782802 20010214; JP 3247391 B2 WO 1997-FR1291 19970711, JP 1998-505682 19970711

FDT AU 9736974 A Based on WO 9802487; EP 912634 A1 Based on WO 9802487; BR 9710338 A Based on WO 9802487; HU 9903102 A2 Based on WO 9802487; JP 2000503704 W Based on WO 9802487; AU 723465 B Previous Publ. AU 9736974, Based on WO 9802487; US 6224663 B1 Based on WO 9802487; US 2001004869 A1 Div ex US 6224663; JP 3247391 B2 Previous Publ. JP 200003704, Based on WO 9802487

PRAI FR 1996-11779 19960927; FR 1996-9062 19960715

IC ICM C08L001-00; C08L001-02; D21C009-00
ICS A23L001-00; A23L001-03; A61K007-00; C04B024-00; C04B024-38; C09D101-02; C09K007-00; C11D001-68; C11D003-00; C11D003-22; C11D003-382

ICI C08L001-02, C08L001:28; C08L001-02, C08L005:00; C08L001-02, C08L029:04; C08L001-02; C08L001:28; C08L001-02, C08L001:28; C08L001-02, C08L001:28; C08L001-02, C08L005:00; C08L001-02, C08L029:04

AB WO 9802487 A UPAB: 20010711
The composition comprises essentially amorphous cellulose nano-fibrils; at least one additive chosen from carboxylated cellulose having degree of substitution > 0.95, a natural polysaccharide, or a polyol; and optionally at least one co-additive. The content of additive and co-additive is at most 30 wt.% based on total weight of nano-fibrils, additive and any co-additive(s).

Also claimed is a suspension of cellulose nano-fibrils obtained by dispersing the above composition. The suspension preferably has a rheo-fluidising type rheological profile.

USE - Carboxylated cellulose and optionally co-additives, with amorphous cellulose nano-fibrils are used to preserve the rheo-fluidising rheological profile of a suspension of amorphous cellulose nano-fibrils having undergone a drying stage. The compositions and suspensions are used as additives in cosmetic, detergent and food formulations, in formulations for use in building, and in fluids used in oil extraction.
Dwg.0/0

FS CPI
FA AB; DCN
MC CPI: A03-A04A; A12-R01; A12-V04; A12-W09; A12-W12A; A12-W12B; D03-H01; D03-H01J; D08-B; D11-B; E10-D03C; H01-B06; L02-D

L77 ANSWER 3 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN 1997-503082 [46] WPIX
DNC C1997-160017
TI Preparation of aqueous tar suspo-emulsion for cleaning tar/sludge - comprises mixing viscous tar composition, inorganic solids and water and surface active agent and thickening water-soluble polymer.
DC A14 A25 A97 D25 E19 H08
IN GUERIN, G; HILL, D P; **LANGLOIS, B**; PRUITT, T E; SANDERS, F L; PRUIT, T E; HILL, P D
PA (RHON) RHONE-POULENC CHIM; (RHON) RHONE-POULENC INC; (RHOD) RHODIA CHIMIE; (RHOD) RHODIA INC; (RHOD) RHODIA CHIM
CYC 71
PI WO 9736970 A2 19971009 (199746)* EN 34p C10C000-00
RW: AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN
AU 9738776 A 19971022 (199808) C10C001-00
NO 9803791 A 19981019 (199901) C10C001-00

```
    EP 882110     A2 19981209 (199902)  EN         C10C001-00
        R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
    CZ 9802595    A3 19990317 (199917)             C10L001-32
    SK 9801138    A3 19990413 (199924)             C10L001-32
    CN 1213394    A  19990407 (199932)             C10L001-32
    NZ 331467     A  20000128 (200015)             C10C003-00
    BR 9708447    A  20000523 (200035)             C10C001-00
    HU 2000000245 A2 20000628 (200039)             C10L001-00
    AU 723738     B  20000907 (200048)             C10C001-00
    MX 9806718    A1 19990401 (200055)             C10L001-32
    KR 99087075   A  19991215 (200056)             C10L001-32
    US 6197837    B1 20010306 (200115)             B01F017-12
    US 6245216    B1 20010612 (200135)             C10G017-00
    JP 2001527587 W  20011225 (200204)        39p  C10C001-00
    EP 1191085    A1 20020327 (200229)  EN         C10L001-32
        R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
    RU 2182589    C2 20020520 (200249)             C10C003-02
    EP 882110     B1 20020911 (200264)  EN         C10C001-00
        R: AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
```

ADT WO 9736970 A2 WO 1997-US3793 19970220; AU 9738776 A AU 1997-38776 19970220; NO 9803791 A WO 1997-US3793 19970220, NO 1998-3791 19980819; EP 882110 A2 EP 1997-936007 19970220, WO 1997-US3793 19970220; CZ 9802595 A3 WO 1997-US3793 19970220, CZ 1998-2595 19970220; SK 9801138 A3 WO 1997-US3793 19970220, SK 1998-1138 19970220; CN 1213394 A CN 1997-192985 19970220; NZ 331467 A NZ 1997-331467 19970220; BR 9708447 A BR 1997-8447 19970220, WO 1997-US3793 19970220; HU 2000000245 A2 WO 1997-US3793 19970220, HU 2000-245 19970220; AU 723738 B AU 1997-38776 19970220; MX 9806718 A1 MX 1998-6718 19980819; KR 99087075 A WO 1997-US3793 19970220, KR 1998-706461 19980819; US 6197837 B1 Provisional US 1996-11977P 19960220, Div ex US 1997-802742 19970220, US 1999-263641 19990305; US 6245216 B1 Provisional US 1996-11977P 19960220, US 1997-802742 19970220; JP 2001527587 W JP 1997-531240 19970220, WO 1997-US3793 19970220; EP 1191085 A1 Div ex EP 1997-936007 19970220, EP 2001-203174 19970220; RU 2182589 C2 WO 1997-US3793 19970220, RU 1998-117465 19970220; EP 882110 B1 EP 1997-936007 19970220, WO 1997-US3793 19970220, Related to EP 2001-203174 19970220

FDT AU 9738776 A Based on WO 9736970; EP 882110 A2 Based on WO 9736970; CZ 9802595 A3 Based on WO 9736970; BR 9708447 A Based on WO 9736970; HU 2000000245 A2 Based on WO 9736970; AU 723738 B Previous Publ. AU 9738776, Based on WO 9736970; KR 99087075 A Based on WO 9736970; JP 2001527587 W Based on WO 9736970; EP 1191085 A1 Div ex EP 882110; RU 2182589 C2 Based on WO 9736970; EP 882110 B1 Related to EP 1191085, Based on WO 9736970

PRAI US 1997-802742 19970220; US 1996-11977P 19960220; US 1996-611977 19960220; US 1999-263641 19990305

IC ICM B01F017-12; C10C000-00; C10C001-00; C10C003-00; C10C003-02; C10G017-00; C10L001-00; C10L001-32
ICS B01F003-14; B08B003-04; B08B009-093; C01B017-74; C08L095-00; C10G017-10; C10G075-00; C23G001-02; C23G001-24

AB WO 9736970 A UPAB: 19990224

The preparation of an aqueous tar suspoemulsion involves mixing a mixture comprising: (a) a viscous tar composition of tar(s), inorganic solids and optionally water, (b) water and (c) at least one surface-active agent exhibiting an HLB of at least 10 and optionally at least one thickening water-soluble polymer with mol. wt. more than 10,000. The relative amounts of water, surface-active agent and polymer are such that the viscosity of the mixture is the same as or more than 0.1 of the viscosity of the tar. A process for fluidizing tars/sludges or cleaning tars/sludges from containers/vessels involves contacting the tar/sludge with an inorganic acid and a surfactant.

USE - For use in fluidizing tars and sludges especially in cleaning tars from reaction vessels, process equipment, transport container and storage tanks.

ADVANTAGE - Residues can be conditioned in fluid form which can be

diluted with water or with acid and which is stable on storage. Does not require any physical alteration to the tank to remove the tar/sludge. Tar/sludge can be easily recovered and the sulphuric acid can be regenerated.
Dwg.0/0
FS CPI
FA AB; DCN
MC CPI: A03-C03; A07-B04; A08-S; A11-A03; A11-C; A12-W12B; D11-A12; D11-D01B; E05-G09C; E05-G09D; E07-D09C; E10-A03; E10-A09A; E10-A09B4; E10-A09B8; E10-A22; E10-B02D6; E10-B03B; E10-B04A2; E10-C04F; E10-D03C; E10-E04M1; E10-E04M3; H08-E05

L77 ANSWER 4 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN **1997-086653** [08] WPIX
DNN **N1997-071447** DNC **C1997-028131**
TI Viscous aq. particle transport fluid - comprising water, guar gum and a **non-acetylated** but otherwise unmodified **xanthan** heteropolysaccharide polymer..
DC A11 A97 D16 H01 Q49
IN HODGE, R M
PA (DUPO) DU PONT DE NEMOURS & CO E I
CYC 1
PI US 5591699 A 19970107 (199708)* 9p E21B043-26
ADT US 5591699 A CIP of US 1993-21943 19930224, US 1994-360558 19941221
PRAI US 1994-360558 19941221; US 1993-21943 19930224
IC ICM E21B043-26
AB US 5591699 A UPAB: 19970220
A viscous aq. particle transport fluid comprises: a) water; b) 0.08-1.0 wt.% of guar gum, and c) 0.02-0.5 wt.% of a **non-acetylated** but otherwise unmodified **xanthan** heteropolysaccharide polymer of formula (I): M = H ion of an alkali metal ion and where the ratio of guar gum to the amt. of **xanthan** heteropolysaccharide polymer used is 2:1 to 5:1.
USE - The transport fluid is used as a drilling fluid, a fracturing fluid or as a filter structure emplacement fluid in mines.
ADVANTAGE - The **xanthan** heteropolysaccharide polymer imparts viscosity to the aq. particle transport fluid.
Dwg.0/2
FS CPI GMPI
FA AB; GI
MC CPI: A03-A00A; A03-C02; A12-W10A; D05-C08; H01-B06A; H01-C03

L77 ANSWER 5 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN **1992-398877** [48] WPIX
CR 1987-051527 [08]; 1987-291652 [41]; 1991-030738 [05]
DNC **C1992-177000**
TI New modified **xanthan gums** - with non-natural acetylation and/or pyruvylation pattern or poly tetramer structure, produced by Xanthomonas campestris mutants.
DC A11 A97 D16 D17 H01
IN DOHERTY, D H; FERBER, D M; HASSLER, R A; MARRELLI, J D; VANDERSLICE, R W; DOHERTY, D N
PA (MONS) MONSANTO CO; (GETT-N) GETTY SCI DEV CO; (TEXC) TEXACO DEV CORP; (DOHE-I) DOHERTY D H; (FERB-I) FERBER D M; (HASS-I) HASSLER R A; (MARR-I) MARRELLI J D; (VAND-I) VANDERSLICE R W; (KELC) CP KELCO US INC
CYC 21
PI WO 9219753 A1 19921112 (199248)* EN 67p C12P019-06
RW: AT BE CH DE DK ES FR GB GR IT LU MC NL SE
W: CA FI JP NO
FI 9304902 A 19931105 (199404) C12P000-00
NO 9304044 A 19931108 (199408) C12P000-00
EP 584206 A1 19940302 (199409) EN C12P019-06
R: AT BE CH DE DK ES FR GB GR IT LI LU MC NL SE

JP 06507433	W	19940825	(199438)		20p	C08B037-00
US 5514791	A	19960507	(199624)		28p	C08B037-00
SG 48883	A1	19980518	(199834)			C12P000-00
US 5948651	A	19990907	(199943)			A01N043-04
FI 105345	B1	20000731	(200044)			C12P019-06
US 6316614	B1	20011113	(200173)			C08B037-00
US 2002103370	A1	20020801	(200253)			C07H013-02
CA 2108895	C	20020709	(200254)	EN		C12P019-06

ADT WO 9219753 A1 WO 1992-US3448 19920501; FI 9304902 A WO 1992-US3448 19920501, FI 1993-4902 19931105; NO 9304044 A WO 1992-US3448 19920501, NO 1993-4044 19931108; EP 584206 A1 EP 1992-911566 19920501, WO 1992-US3448 19920501; JP 06507433 W JP 1992-511434 19920424, WO 1992-US3448 19920424; US 5514791 A CIP of US 1986-844435 19860326, Cont of US 1987-29090 19870323, CIP of US 1989-384621 19890725, CIP of US 1990-566875 19900613, Cont of US 1991-696732 19910507, US 1994-232416 19940425; SG 48883 A1 SG 1996-3370 19920501; US 5948651 A CIP of US 1986-844435 19860326, Cont of US 1987-29090 19870323, CIP of US 1989-384621 19890725, CIP of US 1990-566875 19900613, Div ex US 1991-696732 19910507, Cont of US 1992-928726 19920813, US 1995-406804 19950320; FI 105345 B1 WO 1992-US3448 19920501, FI 1993-4902 19931105; US 6316614 B1 CIP of US 1985-762878 19850806, CIP of US 1986-844435 19860326, Cont of US 1987-29090 19870323, CIP of US 1989-384621 19890725, CIP of US 1990-566875 19900613, Cont of US 1991-696732 19910507, Div ex US 1994-232416 19940425, US 1995-475823 19950607; US 2002103370 A1 CIP of US 1985-762878 19850806, CIP of US 1986-844435 19860326, Cont of US 1987-29090 19870323, CIP of US 1989-384621 19890725, CIP of US 1990-566875 19900613, Cont of US 1991-696732 19910507, Div ex US 1994-232416 19940425, Div ex US 1995-475823 19950607, US 2001-986803 20011113; CA 2108895 C CA 1992-2108895 19920501, WO 1992-US3448 19920501

FDT EP 584206 A1 Based on WO 9219753; JP 06507433 W Based on WO 9219753; FI 105345 B1 Previous Publ. FI 9304902; US 6316614 B1 CIP of US 4713449, Div ex US 5514791; CA 2108895 C Based on WO 9219753

PRAI US 1991-696732 19910507; US 1986-844435 19860326; US 1987-29090 19870323; US 1989-384621 19890725; US 1990-566875 19900613; US 1994-232416 19940425; US 1992-928726 19920813; US 1995-406804 19950320; US 1985-762878 19850806; US 1995-475823 19950607; US 2001-986803 20011113

REP EP 211288; EP 410326; US 4296203; US 4713449; WO 8705939

IC ICM A01N043-04; C07H013-02; C08B037-00; C12P000-00; C12P019-06
ICS C07G017-00; C07H001-00; C12N001-00; C12N001-20; C12P019-04

ICI C12P019-06, C12R001:64

AB WO 9219753 A UPAB: 20021001

(A) New water-soluble polysaccharides (I) comprise repeating **pentamer** units with a G:M:GA ratio of 2:2:1 (G = D-glucose, M = D-mannose, GA = D-glucuronic acid), where the G gps. are linked in a beta-(1,4) configuration, the inner M gps. are linked in an alpha-(1,3) configuration primarily to alternate G gps., the GA gps. are linked in a beta-(1,2) configuration to the inner M gps., and the outer M gps. are linked to the GA gps. in a beta-(1,4) configuration.

(B) New water-soluble polysaccharides (II) comprise repeating tetramer units with a G:M:GA ratio of 2:1:1, where the G gps. are linked in a beta-(1,4) configuration, the M gps. are acetylated or not acetylated at the 6-0 position and are linked in an alpha-(1,3) configuration primarily to alternate G gps., and the GA gps. are linked in a beta-(1,3) configuration to the M gps.

USE/ADVANTAGE - The gums are useful as viscosifiers or thickeners, e.g. in foods, drilling fluids and enhanced oil recovery fluids. The non-pyruvylated gums give lower viscosities at low temps. than wild-type (acetylated/pyruvylated) gums while having comparable viscosities at high temps. The **non-acetylated** gums give higher viscosities than wild-type gums over a broad temp. range.

Dwg.0/12

FS CPI

FA AB
MC CPI: A03-A; A09-A; D03-H01J; D06-H; H01-B06; H01-D06
ABEQ US 5514791 A UPAB: 19960618
A water-soluble polysaccharide polymer comprising repeating **pentamer** units having a D-glucose:D-mannose:D-glucuronic acid ratio of about 2:2:1, wherein the D-glucose moieties are linked in a beta-[1,4] configuration, inner D-mannose moieties are linked in an alpha-[1,3] configuration primarily to alternate glucose moieties, the D-glucuronic acid moieties are linked in a beta-[1,2] configuration to said inner mannose moieties, and outer mannose moieties are linked to said glucuronic acid moieties in a beta-[1,4] configuration, wherein said inner mannose moieties are not acetylated and a portion of said outer mannose moieties are acetylated.
Dwg.0/10

L77 ANSWER 6 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN **1987-291652** [41] WPIX
CR 1987-051527 [08]; 1991-030738 [05]; 1992-398877 [48]
DNC **C1987-123874**
TI New water soluble mutant forms of **xanthan gum** - partic. lacking acetate or pyruvate substitution, esp. useful in oil recovery processes.
DC A11 A97 D13 D16 D17 H01
IN DOHERTY, D H; FERBER, D M; MARRELLI, J D; VANDERSLICE, R W; VANDERSLIC, R W
PA (GETT-N) GETTY SCI DEV CO; (MONS) MONSANTO CO
CYC 16
PI

WO 8705939	A	19871008	(198741)*	EN	36p	
RW: AT BE CH DE FR GB IT LU NL SE						
W: DK FI JP NO						
NO 8704846	A	19880222	(198813)			
JP 63503198	W	19881124	(198902)			
EP 323952	A	19890719	(198929)	EN		
R: AT BE CH DE FR GB IT LI LU NL SE						
NO 9201787	A	19880125	(199236)			C08B037-00
EP 511690	A2	19921104	(199245)	EN	17p	C12P019-06
R: AT BE DE FR GB IT LU NL SE						
NO 172945	B	19930621	(199330)			C12P019-06
EP 323952	B1	19930811	(199332)	EN	16p	C12P019-06
R: AT BE CH DE FR GB IT LI LU NL SE						
DE 3787026	G	19930916	(199338)			C12P019-06
EP 511690	A3	19921119	(199342)			
JP 2559437	B2	19961204	(199702)		16p	C08B037-00
EP 765939	A2	19970402	(199718)	EN		C12P019-06
R: AT BE DE FR GB IT LU NL SE						
EP 765939	A3	19970514	(199731)			
EP 511690	B1	19970730	(199735)	EN	20p	C12P019-06
R: AT BE DE FR GB IT LU NL SE						
JP 09176205	A	19970708	(199737)		16p	C08B037-00
DE 3752096	G	19970904	(199741)			C12P019-06
CA 1339113	C	19970729	(199742)			C12P019-06
JP 2670256	B2	19971029	(199748)		15p	C08B037-00
NO 309102	B1	20001211	(200101)			C12P019-06

ADT WO 8705939 A WO 1987-US606 19870324; JP 63503198 W JP 1987-502340 19870324; EP 323952 A EP 1987-902919 19870324; NO 9201787 A Div ex NO 1987-4846 19870324, WO 1987-US606 19870324, NO 1992-1787 19920506; EP 511690 A2 EP 1992-111024 19870324; NO 172945 B WO 1987-US606 19870324, NO 1987-4846 19871120; EP 323952 B1 EP 1987-902919 19870324, WO 1987-US606 19870324; DE 3787026 G DE 1987-3787026 19870324, EP 1987-902919 19870324, WO 1987-US606 19870324; EP 511690 A3 EP 1992-111024 19870324; JP 2559437 B2 JP 1987-502340 19870324, WO 1987-US606 19870324; EP 765939 A2 Div ex EP 1992-111024 19870324, EP 1996-119095 19870324; EP 765939 A3 Div ex EP 1992-111024 19870324, EP 1996-119095 19870324; EP 511690 B1 Div ex EP

1987-902919 19870324, EP 1992-111024 19870324, Related to EP 1996-119095 19870324; JP 09176205 A Div ex JP 1987-502340 19870324, JP 1996-70588 19870324; DE 3752096 G DE 1987-3752096 19870324, EP 1992-111024 19870324; CA 1339113 C CA 1987-532838 19870324; JP 2670256 B2 Div ex JP 1987-502340 19870324, JP 1996-70588 19870324; NO 309102 B1 WO 1987-US606 19870324, Div ex NO 1987-4846 19871120, NO 1992-1787 19920506

FDT EP 511690 A2 Related to EP 323952; NO 172945 B Previous Publ. NO 8704846, Div in NO 9201787; EP 323952 B1 Based on WO 8705939; DE 3787026 G Based on EP 323952, Based on WO 8705939; JP 2559437 B2 Previous Publ. JP 63503198, Based on WO 8705939; DE 3752096 G Based on EP 511690; JP 2670256 B2 Previous Publ. JP 09176205; NO 309102 B1 Previous Publ. NO 9201787

PRAI US 1987-29090 19870323; US 1986-842945 19860324; US 1986-844435 19860326

REP 6.Jnl.Ref; US 3000790; US 4296203; 11Jnl.Ref; EP 211288; WO 8705938; No-SR.Pub; 7.Jnl.Ref; 5.Jnl.Ref; EP 66961

IC ICM C08B037-00; C12P019-06
ICS C07G017-00; C12N001-20; C12P001-04; C12P019-04

ICA C12R001-64

ICI C12R001:64; C12P019-06, C12R001:64; C12N001-20, C12R001:64; C12P019-06, C12R001:64; C12N001-20, C12R001:64; C12P019-06, C12R001:64

AB WO 8705939 A UPAB: 20020823
A series of water-soluble polysaccharides contg. D-glucose (G), D-mannose (M) and opt. D-glucuronic acid (GA) are new. They have the following characteristics. (1) G: M:GA ratio 2:1:1; G linked beta-1,4; M linked alpha-1,3 (generally to alternate G) and GA linked beta-1,2 to M; (2) G:M:GA ratio 2:2:1; G linked beta-1,4; M, not acetylated at 6-0, linked alpha-1,3 (generally to alternate G); GA linked beta-1,2 to **non-acetylated** M, and a second M contg. a 4,6-ketal linked pyruvate gp. linked beta-1,4 to GA; (3) similar to (2) but first M is 6-O-acetylated and second M does not contain pyruvate; (4) similar to (3) but the second M does not contain pyruvate, and the polymer is at least 90% acetylated; (5) G:M ratio 2:1; G linked beta-1,4 and M (at least 90% being 6-O-acetylated) and linked alpha-1,3, generally to alternate G.

USE/ADVANTAGE - These gums are superior to normal **xanthan gums** in shear rate, salt tolerance and temp. variation of viscosity properties. They are esp. useful in sec. and tert. oil recovery, but can also be used as thickeners (in foods, cosmetics, medicines, paper sizes, drilling muds and printing inks), gelling agents and to reduce frictional drag of fluid in pipes.

FS CPI

FA AB

MC CPI: A03-A; A03-C02; A12-W10B; D03-H01J; D04-B03; H01-B06; H01-D09

ABEQ EP 323952 B UPAB: 19931118
A composition comprising a water-soluble polysaccharide polymer having a D-glucose; D-mannose; D-glucuronic acid ratio of about 2:2:1 wherein (1) the D-glucose moieties are linked in a beta-1,4)configuration, (2) the D-mannose moieties are linked in an alpha-(1,3)configuration generally to alternative glucose moieties, and (3) the D-glucuronic acid moieties are linked in a beta-(1,2)configuration to the mannose moieties.
Dwg.0/3

ABEQ EP 511690 A UPAB: 19931202
A series of water-soluble polysaccharides contg. D-glucose (G), D-mannose (M) and opt. D-glucuronic acid (GA) are new. They have the following characteristics. (1) G: M:GA ratio 2:1:1; G linked beta-1,4; M linked alpha-1,3 (generally to alternate G) and GA linked beta-1,2 to M; (2) G:M:GA ratio 2:2:1; G linked beta-1,4; M, not acetylated at 6-0, linked alpha-1,3 (generally to alternate G); GA linked beta-1,2 to **non-acetylated** M, and a second M contg. a 4,6-ketal linked pyruvate gp. linked beta-1,4 to GA; (3) similar to (2) but first M is 6-O-acetylated and second M does not contain pyruvate; (4) similar to (3) but the second M does not contain pyruvate, and the polymer is at least 90% acetylated; (5) G:M ratio 2:1; G linked beta-1,4 and M (at least 90% being 6-O-acetylated) and linked alpha-1,3, generally to alternate G.

USE/ADVANTAGE - These gums are superior to normal **xanthan gums** in shear rate, salt tolerance and temp. variation of viscosity properties. They are esp. useful in sec. and tert. oil recovery, but can also be used as thickeners (in foods, cosmetics, medicines, paper sizes, drilling muds and printing inks), gelling agents and to reduce frictional drag of fluid in pipes.

ABEQ EP 511690 B UPAB: 19970828
A process for preparing a water-soluble polysaccharide polymer comprising repeating **pentamer** units having a D-glucose: D-mannose: D-glucuronic acid ratio of about 2:2:1, where the D-glucose moieties are linked in a beta- (1,4) configuration, inner D-mannose moieties are linked in an alpha- (1,3) configuration primarily to alternate glucose moieties, the D-glucuronic acid moieties are linked in a beta- (1,2) configuration to the inner mannose moieties, and outer mannose moieties are linked to the glucuronic acid moieties in a beta (1,4) configuration, where the polysaccharide polymer is not acetylated, the process comprising: (a) obtaining an acetylase deficient mutant of Xanthomonas; and (b) culturing the Xanthomonas under conditions sufficient to produce the polysaccharide polymer.
Dwg.0/4

L77 ANSWER 7 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN **1987-079865** [12] WPIX
DNC **C1987-033317**
TI Modification of microbial polysaccharide(s) esp. **xanthan gum** - by adding nitric acid, heating, cooling and neutralising, giving saline-compatible thickener for oil recovery fluids.
DC A11 A97 D16 D17 H01 Q49
IN GROS, P; PIPON, R
PA (RHON) RHONE POULENC SPECIALITES CHIM
CYC 18
PI AU 8661120 A 19870219 (198712)* 34p
FR 2586249 A 19870220 (198713)
JP 62039643 A 19870220 (198713)
EP 215692 A 19870325 (198714) FR 15p
R: AT DE FR GB IT NL SE
BR 8603842 A 19870324 (198715)
NO 8603244 A 19870309 (198716)
FI 8603290 A 19870215 (198719)
DK 8603850 A 19870215 (198720)
CN 86105280 A 19870211 (198818)
ES 2000962 A 19880401 (198919)
US 4873323 A 19891010 (198950) 9p
EP 215692 B 19900314 (199011) FR
R: AT DE FR GB IT NL SE
CA 1265791 A 19900213 (199014)
DE 3669531 G 19900419 (199017)
SU 1570650 A 19900607 (199107)
US 5010186 A 19910423 (199120)
ADT AU 8661120 A AU 1986-61120 19860813; FR 2586249 A FR 1985-12382 19850814; JP 62039643 A JP 1986-188797 19860813; EP 215692 A EP 1986-401699 19860730; ES 2000962 A ES 1986-50 19860813; US 4873323 A US 1986-896282 19860814; SU 1570650 A SU 1986-4027937 19860813; US 5010186 A US 1989-372819 19890913
PRAI FR 1985-12382 19850814
REP 1.Jnl.Ref; EP 103483; EP 78621; FR 2551070; RO 84329; US 4299825
IC A61K031-71; C07G017-00; C08B005-02; C08B009-06; C08B037-00; C08L005-00; C10M145-40; C12N019-00; C12P019-06; E21B043-22
AB AU 8661120 A UPAB: 19930922
Prepn. of a polysaccharide (I) modified by heat treatment of an aq. compsn. contg. 0.05-35 wt.% (I) is characterised in that: (a) the compsn. is acidified with HNO_3 to pH 2-0.1, pref. below 1.5; (b) the compsn. is heated to 50-100, pref. 60-90 deg.C for 5-60, pref. 10-45 min.; and (c)

the compsn. is cooled and base (e.g. NaOH, KOH or NH4OH) is added to pH 5-7. Aq. compsns. of the modified polysaccharides are claimed.

USE/ADVANTAGE - Useful for modifying **xanthan gums** and scleroglucans (claimed), either in whole fermentation broth or as a soln. of commercial (I). The treated prods. are useful for controlling the mobility for enhanced oil recovery, treatment improving the filterability and injectability of the aq. solns. without reducing viscosifiation ability and making them useful in average and low permeability formations. Treatment gives prods. which can be used in a saline medium without clogging.

0/3

FS CPI GMPI
FA AB
MC CPI: A03-A00A; A10-E; A12-W10B; D05-C08; D06-H; H01-B06
ABEQ EP 215692 B UPAB: 19930922

Process for the preparation of a high molecular weight polysaccharide of the homo- or heteropoly-saccharide type, obtained from the fermentation of a carbohydrate by the action of microorganisms, the said polysaccharide, characterised in that: (a) the composition is acidified by adding nitric acid until a pH of between 2 and 0.1 is obtained, (b) the composition is heated to a temperature of 50-100 deg. C for a period of between 5 and 60 minutes and (c) the composition is cooled and the pH is increased to a value of 5 to 7 by adding a base.

ABEQ US 4873323 A UPAB: 19930922

Prepn. of a modified polysaccharide bipolymer comprises (i) acidifying an aq. compsn. of a polysaccharide with nitric acid to pH 2-0.1 (ii) heat treating the acidified compsn. at 50-100 deg.C for 5-60 mins and (iii) cooling the resultant compsn. and adjusting the pH to 5-7 to give a modified polysacc--haride with a decreased no.of acetyl gps.

Pref. the aq. compsn. comprises 0.05-35 wt. % zo of polysaccharide and is a carbohydrate fermentation, broth or an aq. soln. of a powdered polysaccharide.

USE/ADVANTAGE - The **deacetylated** polysaccharides produced have improved viscosity, filterability and injectability and are useful for the recovery of oil from partially depleted oil deposits.

ABEQ US 5010186 A UPAB: 19930922

The prepn. of a modified polysaccharide biopolymer, comprises: (i) acidifying an aq. compsn. of a polysaccharide with nitric acid to pH 2-0.1; (ii) heat treating the acidified compsn. at 50-100 deg.C for 5-60 mins.; and (iii) cooling the heat-treated compsn. and adjusting the pH to 5-7.

The biopolymer pref. further comprises biocide and/or enzyme.

USE - Subterranean oil deposits are recovered using the polysaccharide biopolymer.

L77 ANSWER 8 OF 8 WPIX (C) 2002 THOMSON DERWENT
AN **1979-22429B** [12] WPIX
TI Aq. gels based on **de acetylated xanthan** and galactomannan - are stronger than those obtd. with acetylated **xanthan**, useful in foodstuffs, explosives, air-treating compsns. etc..
DC A11 D13 D17 D22 K04 P34
IN BRIGAND, G; KRAGEN, H
PA (CECA) CECA SA
CYC 6
PI EP 1192 A 19790321 (197912)*
R: CH DE GB NL
FR 2402678 A 19790511 (197924)
EP 1192 B 19811223 (198201) FR
R: CH DE GB NL
DE 2861455 G 19820211 (198207)
US 4369125 A 19830118 (198306)
PRAI FR 1977-27467 19770912

```
REP  US 3384498; US 3677961
IC   A23L001-04; A61L009-01; B01J013-00; C06B047-14; C08L005-00
AB   EP      1192 A UPAB: 19930901
     Prodn. of aq. gels based on galactomannan (I) and xanthan (II)
     uses (partially) deacetylated xanthan (IIa) and a
     (IIa): (I) ratio of 15:85 to 90:10.  Pref. (I) is obtd. from carob, guar,
     tara and/or Espina corona gums.  Carob gum when used pref. has a degree of
     polymsn. sufficient to give a viscosity of 20-6000 cP (1% soln. at 20
     degrees C; Brookfield viscometer at 20 rpm). (IIa) may be obtd. as in
     US3000790.
          Gelling compsns. based on (I) and (IIa) are also claimed, as are gels
     obtd. as above contg. 0.1-4% of (I) + (IIa)).
          Prods. are stronger than previously possible using (II). They can be
     used in foodstuffs, e.g. in aspics or gelled desserts, and in explosive
     gels and air-treatment prods.
FS   CPI GMPI
FA   AB
MC   CPI: A03-A; A10-E09; A12-S; D03-H01J; D06-H; K04-A


=> fil dpci
FILE 'DPCI' ENTERED AT 08:56:28 ON 10 OCT 2002
COPYRIGHT (C) 2002 THOMSON DERWENT

FILE LAST UPDATED: 10 OCT 2002           <20021010/UP>
MOST RECENT DERWENT DPCI UPDATE  200235
PATENTS CITATION INDEX, COVERS 1973 TO DATE

>>>  CURRENT UPDATES CONTAIN CORRECTIONS TO PREVIOUSLY
     LOADED DOCUMENTS <<<

>>>  LEARNING FILE LDPCI AVAILABLE  <<<

=> d all


L78  ANSWER 1 OF 1  DPCI  (C) 2002 THOMSON DERWENT
AN   1999-132209 [11]   DPCI
DNC  C1999-038740
TI   Fluids for oil mining - comprises of a de-acetylated xanthane gum and a
     compound increasing the medium ionic strength.
DC   A11 A14 A97 E37 H01 Q49
IN   LANGLOIS, B
PA   (RHOD) RHODIA CHIM
CYC  82
PI   WO 9903948    A1 19990128 (199911)* EN   33p    C09K007-02       <--
        RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL
            OA PT SD SE SZ UG ZW
         W: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE
            GH GM HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK
            MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US
            UZ VN YU ZW
     FR 2766203    A1 19990122 (199911)              C09K007-02
     AU 9887343    A  19990210 (199925)              C09K007-02
     NO 2000000208 A  20000317 (200025)              C09K000-00
     EP 998540     A1 20000510 (200027)  FR          C09K007-02
         R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
     CN 1267320    A  20000920 (200063)              C09K007-02
     MX 2000000600 A1 20001001 (200158)              C08B037-00
ADT  WO 9903948 A1 WO 1998-FR1514 19980710; FR 2766203 A1 FR 1997-9087
     19970717; AU 9887343 A AU 1998-87343 19980710; NO 2000000208 A WO
     1998-FR1514 19980710, NO 2000-208 20000114; EP 998540 A1 EP 1998-938729
     19980710, WO 1998-FR1514 19980710; CN 1267320 A CN 1998-808299 19980710;
```

```
     MX 2000000600 A1 MX 2000-600 20000117
FDT  AU 9887343 A Based on WO 9903948; EP 998540 A1 Based on WO 9903948
PRAI FR 1997-9087       19970717
IC   ICM  C08B037-00; C09K000-00; C09K007-02
     ICS  E21B021-06; E21B043-22; E21B043-25
FS   CPI GMPI

CTCS CITATION COUNTERS
----------------------
PNC.DI     0              Cited Patents Count (by inventor)
PNC.DX     6              Cited Patents Count (by examiner)
IAC.DI     0              Cited Issuing Authority Count (by inventor)
IAC.DX     3              Cited Issuing Authority Count (by examiner)

PNC.GI     0              Citing Patents Count (by inventor)
PNC.GX     0              Citing Patents Count (by examiner)
IAC.GI     0              Citing Issuing Authority Count (by inventor)
IAC.GX     0              Citing Issuing Authority Count (by examiner)

CRC.I      0              Cited Literature References Count (by inventor)
CRC.X      1              Cited Literature References Count (by examiner)

CDP  CITED PATENTS        UPD: 20001030
------------------

     Cited by Examiner
     -----------------

     CITING PATENT    CAT    CITED PATENT     ACCNO
     ---------------------------------------------------------
     EP 998540      A        No Citations
     WO 9903948     A  Y     EP 765939     A  1987-291652/41
                    PA:  (GETT-N) GETTY SCI DEV CO
                    IN:  DOHERTY, D H; FERBER, D M; MARRELLI, J D; VANDERSLICE,
                         R W; VANDERSLIC, R W
                       Y     GB 1080248    A  1968-74899P/00
                    PA:  (ESSO) ESSO PRODN RES CO
                       Y     US 3096293    A
                    IN:  JEANES
                       Y     US 4186803    A  1980-12617C/07
                    PA:  (TEXA-N) TEXAS BRINE CORP
                    IN:  MONDSHINE, T C
                       A     US 4218327    A  1980-64043C/36
                    PA:  (SHEL) SHELL OIL CO
                    IN:  WELLINGTON, S L
                       Y     US 4868293    A  1987-051527/08
                    PA:  (GETT-N) GETTY SCI DEV CO
                    IN:  SHANON, P; VANDERSLICE, R W; VANDERSLIC, R W; SHANNON,
                         P

REN  LITERATURE CITATIONS  UPR: 20001030
-------------------------

     Citations by Examiner
     ---------------------

     CITING PATENT    CAT    CITED LITERATURE
     -------------------------------------------------------------------------
     EP 998540      A        See references of WO 9903948A1


=> fil wpix
FILE 'WPIX' ENTERED AT 08:59:43 ON 10 OCT 2002
```

```
FILE LAST UPDATED: 07 OCT 2002              <20021007/UP>
MOST RECENT DERWENT UPDATE          200264   <200264/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> SLART (Simultaneous Left and Right Truncation) is now
    available in the /ABEX field. An additional search field
    /BIX is also provided which comprises both /BI and /ABEX <<<

>>> The BATCH option for structure searches has been
    enabled in WPINDEX/WPIDS and WPIX  <<<

>>> PATENT IMAGES AVAILABLE FOR PRINT AND DISPLAY <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES,
    SEE http://www.derwent.com/dwpi/updates/dwpicov/index.html <<<

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE,
    PLEASE VISIT:
 http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER
    GUIDES, PLEASE VISIT:
    http://www.derwent.com/userguides/dwpi_guide.html <<<

=> d all abeq tech abex

L85  ANSWER 1 OF 4  WPIX (C) 2002 THOMSON DERWENT
AN   1987-051527 [08]   WPIX
CR   1987-291652 [41]; 1991-030738 [05]; 1992-398877 [48]
DNN  N1987-039074         DNC C1987-021433
TI   New polysaccharide from Xanthomonas contg. no glucuronic acid - useful as
     viscosifier, esp. for oil recovery under high temp. or salt conditions.
DC   A97 B04 D13 D16 D21 H01 Q49
IN   SHANON, P; VANDERSLICE, R W; VANDERSLIC, R W; SHANNON, P
PA   (GETT-N) GETTY SCI DEV CO
CYC  17
PI   EP 211288      A  19870225 (198708)* EN   28p
         R: AT BE CH DE FR GB IT LI LU NL SE
     NO 8603135     A  19870302 (198715)
     DK 8603721     A  19870207 (198719)
     FI 8603213     A  19870207 (198719)
     JP 62084102    A  19870417 (198721)
     US 4713449     A  19871215 (198806)       12p
     CA 1247033     A  19881220 (198904)
     US 4868293     A  19890919 (198947)       12p                  <--
     CA 1264537     A  19900123 (199008)
     CA 1279180     C  19910122 (199110)
     US 5102561     A  19920407 (199217)       12p
     EP 211288      B1 19921021 (199243)  EN   23p    C12P019-06
         R: BE CH DE FR GB IT LI LU NL SE
     DE 3686986     G  19921126 (199249)              C12P019-06
     FI 92719       B  19940915 (199437)              C12P019-06
     JP 2520881     B2 19960731 (199635)       14p    C08B037-00
     JP 08239403    A  19960917 (199647)       12p    C08B037-00
     JP 2746560     B2 19980506 (199823)       11p    C12N001-20
ADT  EP 211288 A EP 1986-109782 19860716; JP 62084102 A JP 1986-178978
     19860731; US 4713449 A US 1985-762878 19850806; US 4868293 A US 1987-99618
     19870922; US 5102561 A US 1991-715861 19910617; EP 211288 B1 EP
     1986-109782 19860716; DE 3686986 G DE 1986-3686986 19860716, EP
     1986-109782 19860716; FI 92719 B FI 1986-3213 19860806; JP 2520881 B2 JP
     1986-178978 19860731; JP 08239403 A Div ex JP 1986-178978 19860731, JP
```

1995-341723 19860731; JP 2746560 B2 Div ex JP 1986-178978 19860731, JP 1995-341723 19860731
FDT DE 3686986 G Based on EP 211288; FI 92719 B Previous Publ. FI 8603213; JP 2520881 B2 Previous Publ. JP 62084102; JP 2746560 B2 Previous Publ. JP 08239403
PRAI US 1987-99618 19870922; US 1985-762878 19850806; US 1989-333285 19890405; US 1991-715861 19910617
REP 2.Jnl.Ref; A3...198739; No-Sr.Pub
IC ICM C12N001-20; C12P019-06
ICS C08L001-00; C12R001-64; E21B021-00; E21B043-22; G05D024-00
ICA C08B037-00; C09K003-00; C09K007-00; C12P019-04
ICI C12P019-04, C12R001:64; C12N001-20, C12R001:64; C12P019-04, C12R001:64; C12P019-04, C12R001:64
AB EP 211288 A UPAB: 20020823
A new, water-soluble polysaccharide polymer (I) contains no glucuronic acid (GA) and has D-glucose:D-mannose ratio about 2:1. The glucose is linked in thebeta-1,4-configuration and the mannose in the beta-1,3 configuration, generally to alternate glucose residues. Opt. the mannose gps. are 6-O-acetylated. Also new are microbiologically pure cultures of Xanthomonas able to produce (I), specifically the strains ATCC 53195 and 53196.% (I) is made by aerobic fermentation of a Xanthomonas strain, unable to incorporate GA, on a suitable growth medium, pref. at 28-32 deg.C and pH 6-7.5. (I) is recovered by pptn., e.g. using isopropanol or by ultrafiltration.

USE/ADVANTAGE - (I) is used to increase the viscosity of an aq. media, esp. in oil recovery processes, but also in foods, cosmetics, medical formulations, paper sizes, drilling muds, printing inks or to reduce frictional drag of fluid flow in pipes. Compared with xanthan gum, (I) is a better viscosifier,esp. at high temp. and/or under high salt conditions.
Dwg.0/5
FS CPI GMPI
FA AB
MC CPI: A03-A00A; A12-W10B; B04-B02B1; B04-C02; D05-C08; H01-B06; H01-D06
ABEQ EP 211288 B UPAB: 19930922
A water-soluble polysaccharide polymer containing essentially no glucuronic acid moieties having a D-glucose: D-mannose ratio of about 2:1, wherein the D-glucose moieties are linked in a beta-(1,4) configuration and the D-mannose moieties are generally linked to alternate glucose moieties in an alpha-(1,3) configuration.
1/5
ABEQ US 4713449 A UPAB: 19930922
Water-sol., polysaccharide polymer (I) comprises glucose and mannose moieties, having a D-glucose:D-mannose ratio of 2:1.

The D-glucose moieties are linked in a beta-(1,4)-configuration and the D-mannose moieties are linked in an alpha-(1,3) configuration, generally to alternate glucose moieties.

USE/ADVANTAGE - (I) is a better viscosifier of water than naturally occurring xanthan gum.
ABEQ US 4868293 A UPAB: 19930922
Prepn. of a water-soluble, polysaccharide polymer compsn. contg. no glucuronic acid gps., having D-glucose; D-mannose ratio 2:1, and having the D-glucose gps. linked in a beta-1,4 configuration and the D-mannose gps. in alpha-1,3 configuration, generally to alternate glucose moieties is claimed. A growth medium is inoculated with a genus Xanthomonas microorganism which cannot incorporate glucuronic acid into the polysaccharide polymer, and the medium is incubated at suitable temp. and dissolved oxygen content. Microbiologically pure culture of the microorganism is also claimed.

USE/ADVANTAGE - Polymer is esp. useful in mobility control solns. for enhanced oil recovery. It performs well at high temp. and at high salt levels. It can also be used in food, medicines, drilling muds, cosmetics, paper sizing, etc.

ABEQ US 5102561 A UPAB: 19930922
A new process for increasing the viscosity of aq. media (foods, cosmetics, medicines, petroleum drilling fluids) comprises dissolving in it a polysaccharide polymer without gluocouronic acid moieties but having D-glucose:D-mannose ratio of about 2:1. The D-glucose moieties are linked in beta (1.4) configuration and the D-mannose moieties are generally linked to alternate glucose moieties in an alpha (1.3) configuration.
A new process for recovering oil from a subterranean formation comprises injecting a soln. of the above polysaccharide into a well to displace trapped oil from the porous rock and collecting it.
ADVANTAGE - The above polysaccharide is a more effective viscosifying agent than the conventionally used xanthan gum and also has wider salinity and temp. ranges. It may be obtd. by altering Xanthomonas mutants to change its biosynthetic pathway to produce the desired polymer instead of xanthan gum.

=> d all abeq tech abex 2-4

L85 ANSWER 2 OF 4 WPIX (C) 2002 THOMSON DERWENT
AN 1980-64043C [36] WPIX
TI Prepn. of viscosity-stabilised xanthan gum solns. - by using deoxygenated water and adding antioxidant and alcohol.
DC A11 A97 D16 D17 H01
IN WELLINGTON, S L
PA (SHEL) SHELL OIL CO
CYC 1
PI US 4218327 A 19800819 (198036)* <--
PRAI US 1976-673518 19760405; US 1978-903279 19780505
IC C09K003-00
AB US 4218327 A UPAB: 19930902
Prepn. of aq. solns. thickened with xanthan gum (XG) is carried out by (a) treating an aq. liq. to remove dissolved O2, (b) adding a water-soluble S-contg. antioxidant (I), (c) adding a water-soluble, readily oxidisable alcohol (II), and (d) adding XG.
Specifically, (I) and (II) are defined as being capable of protecting a soln. contg. XG, NaCl, a sulphite-type oxygen scavenger and 800 ppm of each of (I) and (II) from drastic (>25%) loss of viscosity when boiled at atmospheric pressure for 5 min.
The process is esp. applicable to XG solns. for use in oil recovery operations. The solns. retain practically constant viscosity when exposed to high temps. over long periods.
FS CPI
FA AB
MC CPI: A03-A; A12-W10; D04-B03; D06-H; H01-D06

L85 ANSWER 3 OF 4 WPIX (C) 2002 THOMSON DERWENT
AN 1980-12617C [07] WPIX
CR 1979-87479B [48]
TI Well completion and workover method - using treating fluid comprising satd. aq. saline soln. with sized particles of water-soluble salt(s).
DC H01 Q49
IN MONDSHINE, T C
PA (TEXA-N) TEXAS BRINE CORP
CYC 1
PI US 4186803 A 19800205 (198007)* <--
PRAI US 1976-735169 19761026; US 1977-850639 19771111; US 1978-938033 19780830
IC E21B033-13
AB US 4186803 A UPAB: 19930902
In a well completion and workover method in which a subterranean formation in a well is contacted with a treating fluid, (a) a treating fluid comprising a satd. aq. saline soln. with >=1 water-soluble salt which is

```
     insoluble in the saline soln. is pumped in the well so that it contacts
     the formation, the saline soln. and the salt each being selected from KCl,
     NaCl, CaCl2, Na2SO4, Na2CO3, NaHCO3, CaBr2 and K2CO3 and mixts. of these;
     (b) the salt is maintained in a particle size range of 5-800 mu with >5%
     of the particles being coarser than 44 mu to bridge and seal off the
     formation; and (c) the salt bridging particles are dissolved off the
     formation to remove the bridge and seal from the formation for flow of
     hydrocarbons into the well.
          Pref. a viscosifier and suspension additive (e.g. CMC) in an amt. of
     0.2-5 lb. per bbl. of satd. brine soln., and a fluid loss additive are
     also circulated in the well bore with the treating fluid.  US4175042
     claimed the treating fluid.
FS   CPI GMPI
FA   AB
MC   CPI: H01-C; H01-C10

L85  ANSWER 4 OF 4  WPIX (C) 2002 THOMSON DERWENT
AN   1968-74899P [00]   WPIX
TI   Aqueous medium for use in underground boring operations.
DC   A97 D16 H01
PA   (ESSO) ESSO PRODN RES CO
CYC  2
PI   NL 6608742    A            (196800)*
     GB 1080248    A            (196801)                          <--
     NL 148083     B  19751225 (197608)
PRAI US 1965-466207   19650623
IC   C08B037-00; C08L005-00; C09K007-02
AB   NL    6608742 A UPAB: 19930831
     Process for injecting an aqueous medium into a borehole in the
     earth, so that the aqueous medium contacts an underground
     formation, employs an aqueous medium containing a
     heteropolysaccharide, produced by the action of bacteria of the
     genus Xanthomonas on a carbohydrate.  The heteropolysaccharide is
     crosslinked in the medium with polyvalent cations of a metal of
     Groups III-VIII.
          The heteropolysaccharide is readily produced by
     fermentation of X.  Campestris upon a carbohydrate containing
     aqueous medium, under conventional aerabic conditions.  The
     product may be obtained from the filtered liquor by means of
     precipitation with methanol or ethanol.  The heteropolysaccharide
     is obtained as a voluminous powder.
FS   CPI
FA   AB
MC   CPI: A03-A; A11-C02; A12-A02


=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 09:00:55 ON 10 OCT 2002
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)
```

FILE COVERS 1907 - 10 Oct 2002 VOL 137 ISS 15
FILE LAST UPDATED: 9 Oct 2002 (20021009/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

CAS roles have been modified effective December 16, 2001. Please
check your SDI profiles to see if they need to be revised. For
information on CAS roles, enter HELP ROLES at an arrow prompt or use
the CAS Roles thesaurus (/RL field) in this file.

```
=> d all 186

L86  ANSWER 1 OF 1  HCAPLUS  COPYRIGHT 2002 ACS
AN   1963:436371  HCAPLUS
DN   59:36371
OREF 59:6604a
TI   Deacetylated polysaccharide thickeners
IN   Jeanes, Allene R.; Sloneker, James H.
PA   United States Dept. of Agriculture
SO   3 pp.; Division of U.S. 3,000,790 (CA 56, 2625d)
DT   Patent
LA   Unavailable
NCL  252316000
CC   50 (Industrial Carbohydrates)
     PATENT NO.       KIND  DATE          APPLICATION NO.  DATE
     ---------------  ----  --------      ---------------  --------
PI   US 3096293             19630702      US               19601031 <--
AB   The disclosures are similar, but the claims are different.


=> fil tulsa
FILE 'TULSA' ENTERED AT 09:05:45 ON 10 OCT 2002
COPYRIGHT (C) 2002 The University of Tulsa (UTULSA)


FILE COVERS 1965 TO 9 OCT 2002 (20021009/ED)

This file contains CAS Registry Numbers for easy and accurate
substance identification.

=> d bib ab rn tot

L94  ANSWER 1 OF 9  TULSA COPYRIGHT 2002 UTULSA
AN   2001:11565  TULSA
DN   753893
TI   NOVEL APPLICATION OF SYNERGISTIC GUAR/NON- ACETYLATED
     XANTHAN GUM MIXTURES IN HYDRAULIC FRACTURING
AU   FISCHER, C C; CONSTIEN, V G; NAVARRETE, R C; COFFEY, M D; ASADI, M
CS   CONSTIEN & ASSOCIATES; KELCO OIL FIELD GROUP; CP KELCO; STIM LAB INC
SO   SPE OILFIELD CHEM INT SYMP (HOUSTON, TX, 2/13-16/2001) PROC 2001
     (SPE-65037; AVAILABLE ON CD-ROM; COLOR; 12 PP; 14 REFS)
DT   Conference; Conference Article
LA   English
AB   Fracturing fluids have traditionally been viscosified with guar and guar
     derivatives. Non-acetylated xanthan is a
     variant of xanthan gum which when combined with guar
     in solution develops a synergistic interaction that generates superior
     viscosity and particle transport at lower polymer concentrations. These
     water-base linear fluids have improved low shear viscosity at
     concentrations at or below 25 lb/1,000 gal when compared to fluids
     viscosified using a single viscosifier such as guar or xanthan
     gum. The polymer mixtures can be crosslinked to provide enhanced
```

viscosity at higher temperatures. The effect of different parameters on the rheology of the mixtures is presented, such as the ratio of guar to **non-acetylated xanthan**, the effect of salts, temperature and shear history. Large scale proppant transport tests were performed to evaluate proppant transport of the mixtures with respect to pure guar fluids

RN 9000-30-0 (GUAR GUM)
11078-30-1 (GALACTOMANNAN)
11138-66-2 (XANTHAN GUM)

L94 ANSWER 2 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 1999:22484 TULSA
DN 711685
CR 704454
TI (R) FLUIDS USEFUL FOR THE EXPLOITATION OF PETROLEUM COMPRISING **DE -ACETYLATED XANTHANE GUM** AND AT LEAST ONE COMPOUND INCREASING THE IONIC STRENGTH OF THE MEDIUM (FLUIDES UTILISABLES DANS L'EXPLOITATION DU PETROLE COMPRENANT DE LA GOMME **XANTHANE** DESACETYLEE ET AU MOINS UN COMPOSE AUGMENTANT LA FORCE IONIQUE DU MILIEU)
IN LANGLOIS, B
PA RHODIA CHIMIE
PI FR 2766203 19990122
AI FR 1997-9709087 19970717
SO FR 2,766,203, C 1/22/1999, F 7/17/1997 (APPL 9,709,087) (C09K-007/02; E21B-021/06; E21B-043/25; E21B-043/22) BULL OFFIC PROPRIETE IND (FR) NO 3, P 88, 1/22/1999 (ISSN 07507650; IN FRENCH; ABSTRACT ONLY) (AO) SRPA# 704,454
DT Patent
LA French
AB (For abstract and indexing, see Abstract #704,454)

L94 ANSWER 3 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 1999:15253 TULSA
DN 704454
TI FLUIDS USEFUL FOR OIL MINING COMPRISING **DE- ACETYLATED XANTHANE GUM** AND AT LEAST ONE COMPOUND INCREASING THE MEDIUM IONIC STRENGTH (FLUIDES UTILISABLES DANS L'EXPLOITATION DU PETROLE COMPRENANT DE LA GOMME **XANTHANE** DESACETYLEE ET AU MOINS UN COMPOSE AUGMENTANT LA FORCE IONIQUE DU MILIEU)
IN LANGLOIS, B
PA RHODIA CHIMIE
PI WO 9903948 19990128
AI WO 19980710
PRAI FR 1997-9709087 19970717
SO WORLD 99/03,948, P 1/28/1999, F 7/10/1998, PR FR 7/17/1997 (APPL 9,709,087) (C09K-007/02; C08B-037/00) (33 PP; 21 CLAIMS; IN FRENCH)
DT Patent
LA French
AB Guar-free fluids capable of being used in oil exploitation are described that contain **deacetylated xanthane gum** in the form of a polypentamer, combined with at least one compound increasing the medium ionic strength. The fluids can be used as filtrate reducers with enhanced properties, using **deacetylated xanthane gum** in the form of a polypentamer, combined with a compound increasing the medium ionic strength and a standard filtrate reducer. The fluids have application as an additive in drilling fluids, workover and completion fluids.
RN **11138-66-2 (XANTHAN)**
11138-66-2 (XANTHAN GUM)

L94 ANSWER 4 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 97:15758 TULSA
DN 655592

CR 545426
TI (R) FAMILY OF **XANTHAN**-BASED POLYSACCHARIDE POLYMERS INCLUDING **NON-ACETYLATED** AND/OR NON-PYRUVYLATED GUM
IN DOHERTY, D H; FERBER, D M; MARRELLI, J D
PA GETTY SCIENTIFIC DEV CO
PI EP 765939 19970402
AI EP 19870324
PRAI US 1986-842945 19860324
PRAI US 1986-844435 19860326
PRAI US 1987-29090 19870323
SO EUROPE 765,939, P 4/2/97, F 3/24/87, PR US 3/24/86 (APPL 842,945), US 3/26/86 (APPL 844,435) AND US 3/23/87 (APPL 29,090) (C12P-019/06; C08B-037/00; C12R-001/64) EUROPE PAT BULL V 1997, NO 14, P 94, 4/2/97 (ISSN 01709305; ABSTRACT ONLY) (AO) SRPA# 545,426
DT Patent
LA English
AB (For abstract and indexing, see Abstract #545,426)
RN **11138-66-2** (**XANTHAN GUM**)

L94 ANSWER 5 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 97:5445 TULSA
DN 645279
TI PARTICLE TRANSPORT FLUIDS THICKENED WITH ACETYLATE FREE **XANTHAN** HETEROPOLYSACCHARIDE BIOPOLYMER PLUS GUAR GUM
IN HODGE, R M
PA DU PONT DE NEMOURS & CO
PI US 5591699 19970107
AI US 19941221
PRAI US 1993-21943 19930224
SO US 5,591,699, C 1/7/97, F 12/21/94, PR US 2/24/93 (APPL 21,943) (F21B-043/26) (9 PP; 8 CLAIMS)
DT Patent
LA English
AB A quite small amount of **nonacetylated** but otherwise unmodified **xanthan** heteropolysaccharide polymer plus a quite small amount of guar gum has been found to impart viscosity to an aqueous particle transport fluid (for example, a drilling fluid, fracturing fluid, or a filter structure emplacement fluid) sufficient to suspend mineral particles. A crosslinking agent can also be employed to further decrease the amount of **non-acetylated xanthan**, heteropolysaccharide polymer and guar gum that are needed for particle suspension. These **xanthan** polymers can be produced by a Xanthomonas campestris variant such as that having Accession No. 68038 at the American Type Culture Collection, Rockville, Md., or by a mutant X. campestris variant having a suitable chromosomal deletion mutation. The **xanthan** polymer variants which are suitable are quite specific. For example, **xanthan** polymers produced by native or wild X. campestris are nowhere nearly as effective in suspending particles, nor are other variants produced by genetic engineering means, nor are conventional xantham polymers which are **deacetylated** by chemical means.
RN 9000-30-0 (GUAR GUM)
11138-66-2 (**XANTHAN**)
11138-66-2 (**XANTHAN GUM**)
39421-75-5 (HYDROXYPROPYL GUAR GUM)

L94 ANSWER 6 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 93:5013 TULSA
DN 545426
TI FAMILY OF **XANTHAN**-BASED POLYSACCHARIDE POLYMERS INCLUDING **NON-ACETYLATED** AND/OR NON-PYRUVYLATED GUM
IN DOHERTY, D H; FERBER, D M; MARRELLI, J D; VANDERSLICE, R W
PA GETTY SCIENTIFIC DEV CO

PI EP 511690 19921104
AI EP 19870324
PRAI US 1986-842945 19860324
PRAI US 1986-844435 19860326
PRAI US 1987-29090 19870323
SO EUROPE 511,690, P 11/4/92, F 3/24/87, PR US 3/24/86 (APPL 842,945), US 3/26/86 (APPL 844,435) AND US 3/23/87 (APPL 29,090) (C12P-019/06; C12R-001/64) (17 PP; 16 CLAIMS)
DT Patent
LA English
AB Variant **xanthan gums** are described, including **non- acetylated**, non-pyruvylated, **non-acetylated** and non- pyruvylated, and fully-acetylated **xanthan gums**. In addition, in vitro and in vivo methods for the synthesis of these gums are described. Mutant Xanthomonas campestris strains useful in these syntheses are also specified. The gums are commonly used as thickening agents, in secondary or tertiary oil recovery as a mobility control and profile modification agent, and in drilling fluids.
RN 127-17-3 (PYRUVIC ACID)
7782-44-7 (OXYGEN)
11138-66-2 (XANTHAN GUM)
25777-71-3 (NATURAL RESIN)
50-99-7Q, 25191-16-6Q (GLUCOSE)
3458-28-4Q, 31103-86-3Q (MANNOSE)

L94 ANSWER 7 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 87:10103 TULSA
DN 420704
TI A POLYSACCHARIDE POLYMER MADE BY XANTHOMONAS
IN VANDERSLICE, R W; SHANON, P
PA GETTY SCIENTIFIC DEV CO
PI EP 211288 19870225
AI EP 19860716
PRAI US 1985-762878 19850806
SO EUROP 211,288, P 2/25/87, F 7/16/86, PR US 8/6/85 (APPL 762,878) (29 PP; 18 CLAIMS)
DT Patent
LA English
AB A polysaccharide polymer, which is a viscosifier of water, and its **non-acetylated** form are comprised of glucose and mannose moieties in a ratio of 2:1. Also described are Xanthomonas mutants which produce the polysaccharide polymer but which do not produce **xanthan gum**. A method of preparing the polysaccharide polymers is described. The polymers may be used in enhanced oil recovery as mobility control and profile modification agents and in drilling fluids.

L94 ANSWER 8 OF 9 TULSA COPYRIGHT 2002 UTULSA
AN 82:8280 TULSA
DN 318268
TI XANTHOMONAS BIPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY DEPLETED RESERVOIRS
IN WERNAU, W C
PI US 4296203 19811020
AI US 1977-851757 19771115
SO US 4,296,203, C 10/20/81, F 11/15/77 (APPL 851,757) (PFIZER INC) (9 CLAIMS)
DT Patent
LA English
AB A process is described for preparing a pyruvate-free Xanthomonas colloid-containing fermentation broth suitable for the preparation of mobility control solutions used in oil recovery which comprises

```
     aerobically fermenting a mutant strain of the genus Xanthomonas in an
     aqueous nutrient medium. The pyruvate-free xanthan and the
     deacetylated form of this biopolymer provide mobility control
     solutions which are especially useful for enhanced oil recovery where high
     brine applications are involved. The mobility control solutions produced
     in accord with this process are employed in oil recovery in the same
     manner as previously known mobility control solutions. (9 claims)
RN   127-17-3  (PYRUVIC ACID)
       11138-66-2  (XANTHAN GUM)
     25777-71-3  (NATURAL RESIN)

L94  ANSWER 9 OF 9  TULSA COPYRIGHT 2002 UTULSA
AN   82:7340  TULSA
DN   317328
TI   XANTHOMONAS BIOPOLYMER FOR USE IN DISPLACEMENT OF OIL FROM PARTIALLY
     DEPLETED RESERVOIRS
IN   WERNAU, W C
PI   CA 1113875 19811208
AI   CA         19781024
PRAI US 1977-851757 19771115
SO   CAN 1,113,875, C 12/8/81, F 10/24/78, PR US 11/15/77 (APPL 851,757)
     (PFIZER INC) (16 CLAIMS)
DT   Patent
LA   English
AB   A process is described for preparing a pyruvate-free Xanthomonas
     colloid-containing fermentation broth suitable for the preparation of
     mobility control solutions used in secondary oil recovery. The process
     involves aerobically fermenting a pyruvate-free xanthan
     -producing strain of a species of the genus Xanthomonas in an aqueous
     nutrient medium. The ingredients of the medium comprise a carbohydrate, a
     source of assimilable nitrogen, and trace elements. The fermentation is
     continued until at least 100 ppm of pyruvate-free xanthan is
     present in the broth, and where required deacetylation is
     performed. The process also provides a pyruvate-free xanthan
     -containing fermentation broth, pyruvate-free xanthan, and their
     deacetylated forms. The pyruvate-free xanthan and the
     deacetylated form of this biopolymer provide mobility control
     solutions which are especially useful for enhanced oil recovery where high
     brine applications are involved. (16 claims)
RN   127-17-3  (PYRUVIC ACID)
     8002-05-9  (CRUDE OIL)
     8002-05-9  (PETROLEUM)
       11138-66-2  (XANTHAN GUM)
     25777-71-3  (NATURAL RESIN)


=> d his

     (FILE 'HOME' ENTERED AT 07:45:35 ON 10 OCT 2002)
                SET COST OFF

     FILE 'REGISTRY' ENTERED AT 07:46:08 ON 10 OCT 2002
                E XANTHAN GUM/CN
L1            1 S E3

     FILE 'HCAPLUS' ENTERED AT 07:46:23 ON 10 OCT 2002
L2         6898 S L1
L3           20 S L1 (L) DEACET?
L4           20 S L3 AND L2
L5         6651 S XANTHAN(A)GUM
                E DEACETYLATION/CT
                E E3+ALL
L6         1069 S E5
```

```
               E E4+ALL
L7         597 S E4
               E E9+ALL
L8         987 S E4,E3+NT
               E E10+ALL
               E E8+ALL
L9        1466 S E2,E4
L10         14 S L2,L5 AND L6-L9
L11         43 S L2,L5  AND DEACET?
L12         13 S L2,L5  AND DEACYL?
L13         57 S L4,L10-L12 AND L2-L12
               E LANGLOIS B/AU
L14         67 S E3-E5,E11-E13
L15          1 S L14 AND L13
L16          1 S L14 AND L2,L5
               E RHODIA/PA,CS
L17       1137 S E3,E4
L18         32 S L2,L5 AND L17
L19          1 S L13 AND L15,L16,L18
L20         31 S L18 NOT L19
               E DRILLING FLUID/CT
               E E4+ALL
L21       7554 S E2,E3,E1+NT
               E E8+ALL
L22       1151 S E2,E1+NT
               E E7+ALL
L23       1561 S E3+NT
               E DRILLING FLUID/CT
               E E4+ALL
               E E9+ALL
L24       2374 S E4,E3+NT
               E E13+ALL
L25       5086 S E4,E3+NT
               E E12+ALL
L26       2374 S E4,E3+NT
               E E2+ALL
L27      12718 S E3,E2+NT
               E DRILLING FLUIDS/CT
L28        402 S E8
               E E3+ALL
               E E11+ALL
L29        388 S E1
L30        276 S L2,L5 AND L21-L29
L31          3 S L30 AND L20
L32          1 S L30 AND L13
L33          4 S L31,L32
L34          1 S L33 AND LANGLOIS ?/AU
L35         56 S L13 NOT L34
L36          0 S L35 AND L30
L37          1 S L35 AND FUEL?/SC,SX
L38          2 S L34,L37
L39         55 S L35 NOT L38
L40         55 S L39 AND XANTHAN
L41         47 S L40 AND GUM
L42          8 S L40 NOT L41
L43         55 S L39-L42
L44         49 S L43 AND (PD<=20000114 OR PRD<=20000114 OR AD<=20000114)
               SEL DN AN 3 4 14 25 30 31 35 44 45 46 47
L45         11 S L44 AND E1-E33
L46         13 S L38,L45
L47         44 S L43 NOT L46
               SEL DN AN 5 6 11 16 17 18 19 20 25 26 28 31 32 33 34 35 38 39 4
L48         21 S L47 AND E34-E96
```

```
L49          34 S L46,L48
L50           9 S L2,L5 AND (DE ACET? OR DE ACYL? OR NONACET? OR NONACYL? OR NO
L51           4 S L50 AND L49
L52           5 S L50 NOT L51
L53           4 S L52 NOT SUBSTRATE/TI
L54          38 S L49,L51,L53
L55        8536 S L2,L5 OR XANTHAN
L56           3 S L55 AND ?PENTAMER?
L57          40 S L54,L56
L58          40 S L57 AND L2-L57
L59           9 S L58 AND ?ACYL?
L60          36 S L58 AND ?ACETYL?
L61          40 S L58-L60
L62         161 S L55 AND C09K007/IC,ICM,ICS
L63           1 S L62 AND L61
L64          40 S L61,L63

     FILE 'REGISTRY' ENTERED AT 08:21:12 ON 10 OCT 2002

     FILE 'HCAPLUS' ENTERED AT 08:21:22 ON 10 OCT 2002

     FILE 'WPIX' ENTERED AT 08:21:47 ON 10 OCT 2002
                E LANGLOIS B/AU
L65          43 S E3-E5
L66        4808 S XANTHAN?(A)GUM OR ?XANTHAN? OR R16377/DCN,PLE
L67           3 S L65 AND L66
                E R07345+ALL/DCN
                E R90071+ALL/DCN
                E R90015+ALL/DCN
                E R90000+ALL/DCN
                E R90083+ALL/DCN
                E R12062+ALL/DCN
L68          38 S (R16377(L)M2095)/PLE
L69         219 S (R16377(L)M2391)/PLE
L70          26 S L66 AND (DEACETY? OR DE ACETY? OR NONACETY? OR NON ACETY?)
L71           3 S L66 AND ?PENTAMER?
L72           1 S L68,L69 AND L70,L71
L73           3 S L67,L72
L74          37 S L68 NOT L73
L75          25 S L70 NOT L73,L74
                SEL DN AN 13 14 18 20 25
L76           5 S L75 AND E1-E10
L77           8 S L73,L76 AND L65-L76

     FILE 'WPIX' ENTERED AT 08:55:27 ON 10 OCT 2002

     FILE 'DPCI' ENTERED AT 08:55:42 ON 10 OCT 2002
                E WO9903948/PN
L78           1 S E3

     FILE 'DPCI' ENTERED AT 08:56:28 ON 10 OCT 2002

     FILE 'WPIX' ENTERED AT 08:57:00 ON 10 OCT 2002
                E EP998540/PN
L79           1 S E3
                E EP765939/PN
L80           1 S E3
                E GB1080248/PN
L81           1 S E3
                E US3096293/PN
                E US4186803/PN
L82           1 S E3
                E US4218327/PN
```

```
L83            1 S E3
                 E US4868293/PN
L84            1 S E3
L85            4 S L79-L84 NOT L77

     FILE 'WPIX' ENTERED AT 08:59:43 ON 10 OCT 2002

     FILE 'HCAPLUS' ENTERED AT 09:00:09 ON 10 OCT 2002
                 E US3096293/PN
L86            1 S E3
L87            1 S L86 NOT L64
L88            0 S L87 AND L2-L64

     FILE 'HCAPLUS' ENTERED AT 09:00:55 ON 10 OCT 2002

     FILE 'TULSA' ENTERED AT 09:03:10 ON 10 OCT 2002
L89          994 S L1
L90         1051 S XANTHAN?(A)GUM OR XANTHAN?
L91         1051 S L89,L90
                 E XANTHAN/CT
                 E E3+ALL
L92          994 S E7,E8
L93         1051 S L91,L92
L94            9 S L93 AND (DEACET? OR NONACET? OR (DE OR NON)()ACET?)
                 E DEACET/CT
                 E ACET/CT

     FILE 'TULSA' ENTERED AT 09:05:45 ON 10 OCT 2002

     INDEX '1MOBILITY, 2MOBILITY, ADISALERTS, AEROSPACE, AGRICOLA, ALUMINIUM,
     ANABSTR, AQUASCI, AQUIRE, BABS, BIBLIODATA, BIOBUSINESS, BIOCOMMERCE,
     BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO, BLLDB, CABA, CANCERLIT, CAOLD,
     CAPLUS, CASREACT, CBNB, CEABA-VTB, ...' ENTERED AT 09:08:24 ON 10 OCT 2002

     FILE 'CBNB, CEN' ENTERED AT 09:08:45 ON 10 OCT 2002
L95          151 S L1
L96          251 S XANTHAN?(A)GUM OR XANTHAN?
L97          251 S L96,L95
L98            0 S L97 AND (DEACET? OR NONACET? OR (DE OR NON)()ACET?)
L99            0 S L97 AND (DEACYL? OR NONACYL? OR (DE OR NON)()ACYL?)
L100           0 S L97 AND (PENTAMER? OR POLYPENTAMER?)
L101           6 S L97 AND ACET?
```